

INTERNATIONAL CONGRESS OF HEALTH AND ENVIRONMENT

October 23-25, 2017

Adana-TURKEY



**Uluslararası
Sağlık ve Çevre Kongresi**
23 - 25 Ekim 2017
Çukurova Üniversitesi
Mithat Özsan Amfisi - ADANA



**International
Congress of Health and Environment**
October 23 - 25, 2017
Çukurova University Mithat Özsan
Conference Center Adana - Turkey

ABSTRACT BOOK

Authors are responsible for the content of the abstract.

INTERNATIONAL CONGRESS OF HEALTH AND ENVIRONMENT

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Dear Colleagues,

On behalf of the Organizing Committee, we are very proud to host the “International Congress of Health and Environmental (ICOHE 2017)” in Adana-Turkey. We welcome all of you from different region of the world.

Although interaction between environment and health is the one of the most encountered problematic issues in this century in human history, the importance and awareness of this issue is not taken in account in numerous conditions, such as in-door and out-door pollution, and climate change, in our life and by the governments. By this congress, all the components of these two problematic themes, health and environment, will be discussed in various aspects during all meetings, hence it is aimed to put forward the problems and solution suggestions with the best scientists on these issues. We hope the issues, discussed in this congress, will be on the agenda both in our country and in the world together with the solution proposal.

You can find very active discussions and cutting-edge lectures by the world’s and national’s top scientists and engineering in this congress.

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October 23-25, 2017

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October 23-25, 2017

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October 23-25, 2017

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October 23-25, 2017

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October 23-25, 2017

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October 23-25, 2017

Adana-TURKEY

SCIENTIFIC PROGRAM

23 OCTOBER 2017 MONDAY	
HALL A	
08:30-10:30	Registration
10:30-11:30	Opening Stance of Respect Independence Anthem Protocol Speeches Music Concert
11:30-12:00	Opening Speech Risks in Food Production Today - Prof. Dr. Mehmet Pala, Halic University
12:00-13:00	LUNCH
13:00-15:00	Chair: Prof. Dr. Mehmet Pala, Halic University Environment, Food and People Relation - Prof. Dr. Hasan Fenercioglu, Cukurova University Environment Education - Prof. Dr. Rodica Stanescu, Bucharest Polytechnic University, ROMANIA Environmental Bioethics - Prof. Dr. Nesrin Cobanoglu, Gazi University Environmental Legislation – Env. Eng. Gulin Erdal, Adana Environment and Urban Planning Provincial Directorate-Environmental Management and Supervision Branch Directorate
15:00-15:30	COFFEE BREAK
15:30-16:00	Pilot Application of Specialized Universities Specialization in the Field of Health and Environment: Duzce University Example Assoc. Prof. Dr. Ertugrul Kaya, Assoc. Prof. Dr. Umit Buyuksari, Duzce University
16:00-17:30	SESSION- I Forensic Science and Environment Chair: Prof. Dr. Ahmet Hilal, Cukurova University Forensic Medicine and Enviromental Health - Prof. Dr. Hakan Kar, Mersin University Radioactive and Nuclear Injuries - Prof. Dr. Halis Dokgoz, Mersin University Chemical and Biological Injuries - Prof. Dr. Caglar Ozdemir, Erciyes University Forensic Toxicology and Enviromental Health -Assoc. Prof. Dr. Nebile Daglioglu, Cukurova University
17:30-18:00	Chair: Assoc. Prof. Dr. Suleyman Ozdemir, Cukurova University Noise and Hearing Health - Assoc. Prof. Dr. Didem Turkyilmaz, Hacettepe University

INTERNATIONAL CONGRESS OF HEALTH AND ENVIRONMENT

October 23-25, 2017

Adana-TURKEY

24 OCTOBER 2017 TUESDAY	
HALL A	
09:00-09:30	Chair: Prof. Dr. Oguz Dinc , Cukurova University Photogrammetry, Unmanned Aerial Vehicles, Laser Scanning-Prof. Dr. Murat Yakar , Mersin University
09:30-10:30	SESSION-II Housing, Workplace, Urbanization and Health Chair: Prof. Dr. Erkan Kozanoglu , Cukurova University Where to Move There is a Health: Exercise Drugs - Prof. Dr. Ibrahim Tekdemir , Ankara University Healthy Urban Environment Planning: Ecological City, Smart City Approaches - Prof. Dr. Mehmet Ocakci , Istanbul Technical University Universal Design for Accessible Health and Environment for All - Prof. Dr. Resa Aydin , Istanbul University
10:30-11:00	COFFEE BREAK
11:00-11:30	Chair: Prof. Dr. Mesut Basibuyuk , Cukurova University Noise Pollution - Prof. Dr. Mehmet Caliskan , Middle East Technical University
11:30-12:00	Chairs: Prof. Dr. Gurdal Tuncel , Middle East Technical University Prof. Dr. Atila Akkoclu , Dokuz Eylul University Statistical and Environmental Evaluations on Some Potential Air Pollution in the City of Tirana, Albania – Assoc. Prof. Dr. Flora Merko , Aleksander Moisiu University, ALBANIA
12:00-13:00	LUNCH
13:00-13:30	Chair: Prof. Dr. Ferdi Tanir , Cukurova University Occupational Diseases - Assoc. Prof. Dr. Omer Hinc Yilmaz , Ankara Occupational and Environmental Diseases Hospital
13:30-15:00	SESSION-III Air Pollution, Environment and Health Chairs: Prof. Dr. Ismail Hanta , Cukurova University Prof. Dr. Hasan Bayram , Koc University Variation of Chemical Composition of Rainwater in Different Parts of Turkey: Long-Term Trends Since 1990 - Prof. Dr. Gurdal Tuncel , Middle East Technical University Assessment of Human Air Pollution Exposure-Results and Perspectives in Danish Studies - Prof. Dr. Ole Hertel , Aarhus University, DENMARK Health Effects of Air Pollution - Prof. Dr. Hasan Bayram , Koc University
15:00-15:30	COFFEE BREAK
15:30-17:00	Chair: Prof. Dr. Onder Ergonul , Koc University Water Pollution and Control- Prof. Dr. Yuksel Ardali , 19 Mayıs University Phytotoxicity Test Method Application in Environmental Engineering Problems - Prof. Dr. Sukru Dursun , Selcuk University Vector Related Diseases - Prof. Dr. Onder Ergonul , Koc University
17:00-18:00	Chair: Prof. Dr. Seyhan Tukul , Cukurova University Global Warming, Climate Change and Environmental Health - Assoc. Prof. Dr. Siddik Cindoruk , Uludag University Renewable Energy Sources and Hydrogen Energy - Prof. Dr. Gulfeza Kardas , Cukurova University
19:00-21:30	GALA DINNER

INTERNATIONAL CONGRESS OF HEALTH AND ENVIRONMENT

October 23-25, 2017

Adana-TURKEY

25 OCTOBER 2017 WEDNESDAY

HALL A

09:00-10:30	SESSION-IV Solid Waste, Biomedical Waste, Hazardous Waste, Medical Waste Chair: Prof. Dr. Yesim Tasova, Cukurova University Hazardous Waste Management in Turkey - Prof. Dr. Bulent Topkaya, Akdeniz University Municipal Solid Wastes Management in Turkey - Prof. Dr. Mufide Banar, Anadolu University Medical Waste - Prof. Dr. Yesim Tasova, Cukurova University
10:30-11:00	COFFEE BREAK
11:00-12:00	Chair: Prof. Dr. Hasan Fenercioglu, Cukurova University Ecology, Ecosystem and Biodiversity Biomass, Agricultural Properties - Prof. Dr. Ibrahim Halil Elekcioglu, Cukurova University Why Do We Have to Recycle and Where Do We Lead? - Prof. Dr. Aysun Sofuoglu, Izmir Institute of Technology
12:00-13:00	LUNCH
13:00-14:30	SESSION-V Environmental Radiation, Genetics and Cancer Chair: Assoc. Prof. Dr. Atil Bisgin, Cukurova University Technologically Enhanced Naturally Occurring Materials: When Natural Might Not Be Healthy - Prof. Dr. Massimo Zucchetti, Torino Politechnical University, ITALY (Teleconference) Environment and Genetics - Dr. Bertie de Leeuw, RLM-PAL Dordrecht, HOLLAND Microbiota, Health and Disease - Prof. Dr. Semra Paydas, Cukurova University
14:30-15:00	COFFEE BREAK
15:00-16:00	SESSION-VI Endocrine Disruptors Chair: Prof. Dr. Murat Sert, Cukurova University Environmental Aspect of Endocrine Disrupting Chemicals (EDCS) - Prof. Dr. Mesut Basibuyuk, Cukurova University Effects of Endocrine Distruptors on Health - Assoc. Prof. Dr. Ayse Kubat Uzun, Istanbul University
16:00-17:00	Chair: Prof. Dr. Seref Erdogan, Cukurova University Seasonality Climatic Changes, Psychiatric Diseases - Assist. Prof. Dr. Semra Ocak Karatas, Recep Tayyip Erdogan University
17:00-17:30	CLOSING

INTERNATIONAL CONGRESS OF HEALTH AND ENVIRONMENT

October 23-25, 2017

Adana-TURKEY

ORAL PRESENTATIONS

Number	TITLE/AUTHORS
	23 OCTOBER 2017- MONDAY HALL B
13.00-15.00	Chairs: Prof. Dr. Mesut BASIBUYUK, Prof. Dr. Gulfeza KARDAS
IS	BIOGAS POTENTIAL OF EREGLI CITY <u>Fatma Didem TUNCEZ</u>
IS	ENVIRONMENTAL IMPACTS OF REFRIGERANTS AND THE NEXT GENERATION REFRIGERANT R-32 <u>Aytac YAKUT</u>
OP-1	LIQUID CHROMATOGRAPHY MASS SPECTROMETER (LC-MS/MS) AND QUARTZ CRYSTAL MICROBALANCE SENSOR STUDY OF QUALITATIVE AND QUANTITATIVE OF PESTICIDE RESIDUES IN TOMATO AND WATER USING MOLECULAR IMPRINTING TECHNIQUE <u>Oguz CAKIR, Fatma YILMAZ, Zubeyde BAYSAL, Adil DENIZLI</u>
OP-2	AN INTEGRATED APPROCHE TO THE ENVIRONMENTAL HEALTH PROBLEMS: ONE HEALTH <u>Osman YILMAZ, Sibel OYMAK, Adnan SERPEN</u>
OP-3	THE COPULA APPLICATION ON DROUGHT RISK OF ADANA PROVINCE OF TURKEY <u>Soner Cagatay BAGCACI, Nermin SARLAK, Meral BUYUKYILDIZ</u>
OP-4	EXPRESSION OF GENE WORKS ON DROUGHT-NO (NITRIC OXIDE) INTERACTION ON WHEAT (<i>Triticumaestivum</i> L.) SEEDLINGS AND ANTIOXIDANT ENZYMES ACTIVITY <u>Nagehan YAYIK, Nuray ERGUN</u>
OP-5	LAND SURFACE TEMPERATURE RETRIEVAL FROM LANDSAT 8 IMAGERY: A CASE STUDY OF MINSK, BELARUS <u>Hakan OGUZ, Kivanc YUKSEL</u>
OP-6	A COMPARISION OF THE APPROACHES REGARDING MEDICAL WASTE MANAGEMENT OF SIIRT DISTRICT AND RELEVANT APPLICATIONS <u>Nilgun Onursal, Ali Rıza KUL</u>
15.00-15.30	COFFEE BREAK
15.30-17.00	Chairs: Prof. Dr. Mesut BASIBUYUK, Assist. Prof. Dr. Sevda OCAK
IS	WASTE WATER TREATMENT SYSYTEM <u>Savas Yuksel YALCIN</u>
OP-7	A SUBJECT THAT NEGLECTED OF ENVIRONMENTAL EDUCATION “NOT BURYING DEAD ANIMALS” <u>Fuat ODABASIOĞLU</u>
OP-8	THE USAGE OF ARGUMENTATION BASED AND PROBLEM BASED LEARNING APPROACHES INTENDED FOR DEVELOPING THE ENVIRONMENTAL COGNITIVE SKILLS OF PRESERVICE SCIENCE TEACHERS <u>Pınar FETTAHLIOĞLU, Mustafa AYDOĞDU</u>
OP-9	ENVIRONMENTAL RISK PERCEPTION OF DENTISTRY STUDENTS <u>Enes YALCINER, Hatice Ferda DOĞAN</u>
OP-10	ENVIRONMENTAL ENGINEERING EDUCATION IN TURKEY, PROBLEMS AND SOLUTION PROPOSALS <u>Betul GONCU, Hakki GULSEN</u>

INTERNATIONAL CONGRESS OF HEALTH AND ENVIRONMENT

October 23-25, 2017

Adana-TURKEY

OP-11	EVALUATION OF THE IMPLEMENTATION OF THE "WHITE FLAG COOPERATION PROTOCOL" WAS DONE IN ANKARA BETWEEN THE YEARS 2013-2017 <u>Asiye Cigdem SIMSEK</u>, Dogan AKDOGAN, Zuhal YILDIRIM, Ziya DEMIR, Cavit Isik YAVUZ, Haluk CORBACI
OP-12	THE PLACE OF ENVIRONMENTAL HEALTH COURSES IN NURSING EDUCATION IN TURKEY <u>Makbule SENEL</u>, Bilge KALANLAR
23 OCTOBER 2017- MONDAY HALL C	
13.00-14.00	Chairs: Assoc. Prof. Dr. Funda Gulay KADIOGLU, Assoc. Prof. Dr. Selim KADIOGLU
OP-13	WASTE MANAGEMENT IN HEALTH INSTITUTIONS WITHIN THE SCOPE OF ENVIRONMENTAL LAW AND LEGISLATION <u>Fatma AZIZOGLU</u>, Bilge HAPCIOGLU
OP-14	OVERPOPULATION AND HAZARDS OF PET ANIMALS (CATS AND DOGS) <u>Metehan KUTLU</u>, Dursun Ali DINC
OP-15	QUALITY OF WORK LIFE AND ETHICAL SENSITIVITY OF NURSES <u>Sevban ARSLAN</u>, <u>Secil TAYLAN</u>, <u>Ebru GOZUYESİL</u>
OP-16	THE FREEDOM OF PERFORMING AND PUBLISHING SCIENTIFIC RESEARCH SPECIFIC TO THE GENETICALLY MODIFIED ORGANISMS <u>Hatice CIVGIN</u>
OP-17	PROMOTE THE BIOETHICAL MATURITY <u>Funda Gulay KADIOGLU</u>, <u>Selim KADIOGLU</u>
14.00-15.10	Chair: Assoc. Prof. Bulent SARI
OP-18	EFFECTS OF WATER QUALITY ON PLANT NUTRIENT CONTENT AND FRUIT QUALITY OF RUBYGAM STRAWBERRY CULTIVARY <u>Sebnem Nalan AKAROGLU</u>, <u>Saime EFEROGLU</u>
OP-19	DETERMINATION OF THE ENVIRONMENTAL QUALITY OF THE INTERIOR IN A HEALTH ORGANIZATION AND EVALUATION OF OCCUPATIONAL HEALTH AND SAFETY <u>Burcu ONAT</u>, <u>Hesna Gulsen AKKAYA</u>, <u>Gulay MANAV</u>
OP-20	DYE REMOVAL POTENTIAL OF <i>PRUNUS AMYGDALUS</i> L. (ALMOND) SHELL AS A LOW-COST AGRICULTURAL SOLID WASTE <u>Fatih DENIZ</u>, <u>Remziye Aysun KEPEKCI</u>
OP-21	EQUILIBRIUM AND KINETIC STUDIES OF BIOSORPTION OF AN AZO DYE FROM AQUEOUS SOLUTION BY WALNUT SHELL <u>Fatih DENIZ</u>, <u>Remziye Aysun KEPEKCI</u>
OP-22	INVESTIGATION IN TERMS OF ENVIRONMENTAL FACTORS OF THE WASTE CAUSED BY DISASTERS: SAMPLE OF 1992 ERZİNCAN EARTHQUAKE <u>Vildan ORAL</u>, <u>Afsin Ahmet KAYA</u>, <u>Meliksah TURAN</u>
OP-23	SOLID WASTE PROBLEM IN DISASTERS AND SOLUTION PROPOSAL: SAMPLE OF VAN EARTHQUAKE <u>Afsin Ahmet KAYA</u>, <u>Vildan ORAL</u>, <u>Meliksah TURAN</u>
OP-24	AMOXICILLIN REMOVAL FROM WASTE WATER BY USING PECTIN NANOCOMPOSITE <u>Yagmur UYSAL</u>, <u>Esin KAYAN</u>
15.10-15.30	COFFE BREAK

INTERNATIONAL CONGRESS OF HEALTH AND ENVIRONMENT

October 23-25, 2017

Adana-TURKEY

15.30-16.20	Chair: Prof. Dr. Sukru DURSUN
OP-25	BREEDING PHENOLOGY AND HABITAT CHARACTERISTICS OF LEVANTEN WATER FROG, PELOPHYLAX BEDRIAGAE IN CUKUROVA DELTA (ADANA, TURKEY) <u>Yusuf BAYRAKCI, Kerim CICEK, Dincer AYZ</u>
OP-26	BUPRESTIDAE BIODIVERSITY OF MOUNT MUSA (HATAY) <u>Uzeyir CAGLAR, Ersin DEMIREL</u>
OP-27	BIOLOGICAL CONTROL METHODS FOR PEST MANAGEMENT IN VINEYARDS <u>Blerina VRENOZ, Sukru DURSUN, Zeynep Cansu AYTURAN</u>
OP-28	FUTURE TRENDS IN WASTEWATER MANAGEMENT AND DEVELOPMENTS IN TURKEY <u>Bilgehan NAS, Taylan DOLU</u>
OP-29	GENERATING OF SOME FOREST MAPS AND FOREST ROAD NETWORK WITH GIS <u>Erhan CALISKAN</u>
16.30-17.30	Chair: Prof. Dr. Mesut BASIBUYUK
OP-30	REMOVAL OF CHROMIUM HEAVY METAL FROM WASTE WATER USING VAN PUMICE <u>Ali Riza KUL</u>
OP-31	CHARACTERISATION OF ACTIVE CARBON FROM ORANGE SKIN BY MEANS OF CHEMICAL ACTIVATION AND THE USE OF IT IN THE ADSORPTION OF COPPER <u>Ali Riza KUL, Nur AKMAN ALACABEY, Huseyin ALKAN, Ihsan ALACABEY</u>
OP-32	CHARACTERIZATION AND IMMOBILIZED OF COPPER AND CADMIUM ON MIXTURE FORMED WITH NUTSHELL AND AMBERLITE XAD-4 <u>Ibrahim TEGIN, Selma AKDENIZ, Ihsan ALACABEY, Orhan ACAR</u>
OP-33	REVIEW OF ESTIMATION THE EFFECTS OF PETROLEUM REFINERY EFFLUENTS ON THE PHYSICOCHEMICAL PROPERTIES FOR SURFACE WATER <u>Mosstfa MAAROOF, Sukru DURSUN</u>
OP-34	LACCASE FROM THE BACTERIA BACILLUS OKUHIDENSIS: EFFECT OF pH, TEMPERATURE AND DIFFERENT INHIBITOR AND SUBSTRATES ON ENZYME ACTIVITY <u>Ayşe BUZDOGAN, Ozlem KIRAN</u>
24 OCTOBER 2017 TUESDAY HALL B	
09.00-10.10	Chairs: Prof. Dr. Murat GUNDUZ, Assit. Prof. Dr. Seza INAL
IS	RE-EMERGING ENVORIMENTAL HEALTH TREAT: NONTUBERCULOUS MYCOBACTERIA <u>Togrul NAGIYEV</u>
OP-35	DETERMINATION OF ANTIBIOTIC RESISTANCE PROFILE OF <i>ESHERICHIA COLI</i> AND RATIO OF MULTIPLE ANTIBIOTICS RESISTANT (MAR) IN URINE SAMPLES <u>N Ceyhan GUVENSEN, D Keski, F SANKU</u>
OP-36	ASSOCIATION OF VACA AND CAGA GENOTYPES with PLASTICITY REGION GENES JHP0947 and JHP0949 of HELICOBACTER PYLORI in CHILDREN with NON-ULCER DYSPEPSIA <u>Togrul NAGIYEV, Tulay KANDEMIR, Tulin GUVEN GOKMEN, Gokhan TUMGOR, Fatih KOKSAL</u>
OP-37	THE ROLE OF MYCOBACTERIAL INFECTIONS IN KERATITIS CASES <u>Togrul NAGIYEV, Ali UCKAYABASI, Begum KAYAR, Elif ERDEM, Emel YARAR, Firat KARSLI, IbrahimInan HARBIYELI, Meltem YAGMUR, Fatih KOKSAL</u>
OP-38	COMPARISON of GEOGRAPHICAL DISTRIBUTION of BACTERIAL SPECIES in TERMS of ECOSYSTEM and PUBLIC HEALTH in TURKISH SEAS <u>Gulsen ALTUG, Mine CARDAK, Sevan GURUN, Pelin S. CIFTICI TURETKEN, Samet KALKAN</u>

INTERNATIONAL CONGRESS OF HEALTH AND ENVIRONMENT

October 23-25, 2017

Adana-TURKEY

10.20 -12.30	Chairs: Prof. Dr. Akgun YAMAN, Prof. Dr. Halil CAKAN,
OP-39	ARSENIC CONTAMINATION AND ARSENIC-METABOLIZING BACTERIA OF VAN LAKE, TURKEY <u>Esra ERSOY OMERUGLU, Ismail KARABOZ</u>
OP-40	IS FUNGAL CONTAMINATION (ASPERGILLOSIS) IN THE HOSPITAL ENVIRONMENT A RISK IN NEUTROPENIC PATIENTS? <u>Huseyin GUDUCUOGLU, Kamuran KARAMAN, Mehmet PARLAK</u>
OP-41	THE EFFECT OF PROPOLIS ON LIPID PEROXIDATION AND SOME ANTIOXIDANTS PARAMETERS IN THE RADIATION EXPOSED RATS <u>Halil SIMSEK, Enes KAYA, Mehtap OZCELIK</u>
OP-42	EFFECTS OF ELECTROMAGNETIC FIELD EXPOSURE ON EPIDERMOS THICKNESS OF MATURE AND IMMATURE RATS <u>Zuleyha ERISGIN, Aysegul AKAR, Ertugrul SUNAN, Bulent AYAS, Leman TOMAK</u>
OP-43	DETECTION OF ELECTROMAGNETIC FIELD POLLUTION IN MERSIN UNIVERSITY CAMPUSES AND DETERMINATION OF EXPOSURE MEASUREMENTS ACCORDING TO INTERNATIONAL STANDARDS <u>Cagatay Han TURKSEVEN, Kuddis BUYUKAKILLI, Esra PEKOGLU, Mustafa TUMA Y, Zeki YARAR, Belgin BUYUKAKILLI</u>
OP-44	NEUROTOXIC EFFECTS OF PRENATAL ELECTROMAGNETIC FIELD EXPOSURE ON VENTRAL COCHLEAR NUCLEUS OF NEWBORN RAT <u>Aysegul AKAR, Zuleyha ERISGIN, Ertugrul SUNAN, Bulent AYAS, Leman TOMAK</u>
OP-45	REMOVAL EFFICIENCY OF ANTHRACENE MICROPOLLUTANT IN KONYA WASTEWATER TREATMENT PLANT <u>Taylan DOLU, Bilgehan NAS</u>
OP-46	EFFECTS OF PETROCOKE AS AN INDUSTRIAL FUEL TYPE ON HUMAN HEALTH AND ENVIRONMENT <u>F. Fusun UYSAL, Selin BAHAR</u>
OP-47	ADSORPTION PROPERTIES OF OAK SAWDUST FOR Cd(II) IONS REMOVAL FROM AQUEOUS SOLUTIONS <u>Celal DURAN, Duygu OZDES, Ozgun KALKISIM, Yener TOP, Ibrahim YILDIRIM</u>
OP-48	THE CHANGES IN SOME PHYSICOCHEMICAL PARAMETERS OF AKPINAR STREAM (AGIN, ELAZIG) THROUGHOUT FLOW DIRECTION <u>Ozlem Oztekin OKAN, Ozgur CANPOLAT, Metin CALTA, Sami Serkan ISOGLU, Fatih KAYA, Nurdan GUNGOR, Emin GUNGOR</u>
12.30-13.00	LUNCH
13.00-14.00	Chairs: Prof. Dr. Ramazan BILGIN, Prof. Dr. Sevim POLAT
OP-49	THE EFFECTS OF 1800 MHZ RADIO FREQUENCY RADIATION ON UTERINE CONTRACTILITY <u>Selma YAMAN, Badel ARSLAN, Evren DEGIRMENCI, Nurcan ARAS, Aysegul AKAR, Ulku COMELEKOGLU</u>
OP-50	INVESTIGATION OF FREE LIVING AMOEBAE IN NATURAL WATER RESOURCES IN ADANA <u>Ismail Soner KOLTAS, Mehtap DEMIRKAZIK</u>
OP-51	DIAGNOSIS OF CUTANEOUS LEISHMANIASIS BY REAL-TIME POLYMERASE CHAIN REACTION IN CUKUROVA REGION, TURKEY <u>Ismail Soner KOLTAS</u>
OP-52	DETERMINATION OF SPATIAL DISTRIBUTION OF VECTOR SAND FLY SPECIES OF CUTANEOUS LEISHMANIASIS IN KARAISALI IN ADANA, TURKEY <u>Hakan KAVUR, Gulsah EVYAPAN, Mehtap DEMIRKAZIK, Davut ALPTEKIN, I. Soner KOLTAS, Ozan ARTUN</u>
OP-53	PRODUCTION AND PURIFICATION OF A NOVEL THERMOSTABLE RAW STARCH HYDROLYZING α -AMYLASE OBTAINED FROM <i>Bacillus mojavensis</i> SO-B11 <u>Sema AGULOGLU FINCAN, Veysi ORTAKAYA, Sadin OZDEMIR, Baris ENEZ</u>

INTERNATIONAL CONGRESS OF HEALTH AND ENVIRONMENT

October 23-25, 2017

Adana-TURKEY

OP-54	Seroprevalence of Hepatitis B Before and After the National Hepatitis B Vaccination Program Central Laboratory of Balçalı Hospital Gulcin DAGLIOGLU, Salih CETİNER, Akgun YAMAN
14.00-15.00	Chair: Prof. Dr. Mesut BASIBUYUK
OP-55	SYNTHESIS AND CHARACTERIZATION OF PISTACHIO PEELS-CONTAINED POLYOLS Tulay GURSOY, Mehmet Hakki ALMA
OP-56	ASSESSMENT OF RENEWABLE ENERGY PRODUCTION PERFORMANCES OF OECD COUNTRIES Ihsan ALP, Mıhrac KUPELİ, Seher BODUR
OP-57	THE BALANCE OF CHANGES OF RENEWABLE ENERGY AGAINST GREENHOUSE GAS EMISSIONS IN THE MOST POLLUTING COUNTRIES: A MALMQUIST INDEX APPROACH Ihsan ALP, Mıhrac KUPELİ, Seher BODUR
OP-58	TREND AND STABILITY OF EUROPEAN UNION COUNTRIES AND TURKEY'S WASTE MANAGEMENT PERFORMANCE Ihsan ALP, Mıhrac KUPELİ, Seher BODUR
OP-59	TOTAL LIPID CONTENT AND FATTY ACID COMPOSITION OF SIX SPECIES OF MICROALGAE Burcu AK, Oya ISIK
OP-60	THE EFFECTS OF NITROGEN LIMITATION ON THE GROWTH AND FUcoxANTHIN PRODUCTION, LIPID AND FATTY ACID COMPOSITION OF A DIATOM <i>Chaetoceros</i> sp. Burcu AK, Oya ISIK, Jantana PRAIBOON, Kamonlak NINSUWAN
15.00-15.30	COFFEE BREAK
15.30-16.10	Chair: Prof. Dr. Ahmet Mahmut KILIC
OP-61	RECOVERY OF GOLD AND SILVER BY LEACHING FROM FLOTATION CONCENTRATE WASTE RECEIVED COPPER AND COBALT Ibrahim TEGIN, Recep ZİYADANOGULLARI
OP-62	COMPARISON OF EXPERIMENTAL AND THEORETICAL VALUES OF FLY-ROCK DISTANCE CAUSED BY BLASTING Ahmet Mahmut KILIC, Ozen KILIC, Esmâ KAHRAMAN,
OP-63	PASTEURIZATION CASES IN SEA BASS AND SEA BREAM CULTURED IN THE AEGEAN REGION AND OTHER BACTERIA ISOLATED FROM THESE CASES Meriç Lutfi AVSEVER
OP-64	SOME METAL CONCENTRATIONS CARRIED BY RIVERS IN THE NORTHWESTERN REGION OF KEBAN DAM LAKE Ozlem OZTEKİN OKAN, Özgür CANPOLAT, Metin CAGLAR, Kursat Kadir ERIS
16.20-17.00	Chair: Prof. Dr. Fatma CEVİK
OP-65	VIRULENCE GENE PROFILES OF <i>CAMPYLOBACTER JEJUNI</i> FROM CATTLE SLAUGHTERHOUSE WASTEWATER ISOLATES Mehmet ELMALI, Hayriye Yesim CAN
OP-66	WATERBORNE DISEASES AND PROTECTION WAYS FOR PUBLIC HEALTH Makbule SENEL, Bilge KALANLAR
OP-67	PHARMACEUTICALS AND PERSONAL CARE PRODUCTS (PPCPs) POLLUTION IN GÖLBAŞI LAKE, TURKEY Fatma CEVİK, Esen YAVUZ GUZEL, Nebile GOKCE DAGLIOGLU
OP-68	SOIL PROPERTIES AND PROBLEMS IN KONYA REGION Zeynep Cansu AYTURAN, Sukru DURSUN

INTERNATIONAL CONGRESS OF HEALTH AND ENVIRONMENT

October 23-25, 2017

Adana-TURKEY

24 OCTOBER 2017 TUESDAY	
HALL E	
09.00-10.00	Chairs: Prof. Dr. Ayfer PAZARBASI- Assoc. Prof. Dr. Sevcan TUG BOZDOGAN
OP-69	EVALUATION OF THE KNOWLEDGE AND RELEVANCE OF LABORATORY WORKERS AND MEDICAL LABORATORY PROGRAM STUDENTS ABOUT OCCUPATIONAL RISKS Ozlen TUBAY BAGDATOGLU, Hatice YILDIRIM YAROGLU, Gul BAYRAM ABIHA, Bora RESITTOGLU, Sema ERDEN ERTURK
OP-70	ASSESSMENT OF THE MTHFR C677T AND APOB G10708A GENE POLYMORPHISMS RELATED TO CARDIOVASCULAR DISEASES IN HEALTHY BLOOD DONORS Sule MENZILETOGLU YILDIZ, Derya KOCAMAZ, Birol GUVENC
OP-71	THE TRANSFORMING GROWTH FACTOR- β 1 (TGF- β 1) GENE POLYMORPHISM (TGF- β 1 T29C) AND RISK OF PREECLAMPSIA IN TURKISH PREGNANT WOMAN Ayfer PAZARBASI, Lutfiye OZPAK, Nursen KESER, Fatma Tuncay OZGUNEN
OP-72	INVESTIGATION OF EXPRESSION LEVELS OF ALZHEIMER RELATED-GENES IN HFD AND STZ INDUCED THE TYPE 2 DIABETIC RATS Lutfiye OZPAK, Ayfer PAZARBASI, Isil OCAL, Bertan YILMAZ, Nermin Seda ILGAZ, Hale OKSUZ
OP-73	EVALUATION OF GENE POLYMORPHISMS OF CYTOCHROME P450 FAMILY ENZYMES IN DRUG ABUSE INDUCED DEATHS Sabriye KOCATURK SEL, Nebile DAGLIOGLU, Pinar EFEOGLU OZSEKER, Hale OKSUZ, Mete GULMEN, Hüsnü Umit LULEYAP, Mehmet Bertan YILMAZ
OP-74	THE EFFECTS OF MEDICAMENTS USED IN AQUACULTURE ON ENVIRONMENTAL HEALTH Selcuk DUMAN, İbrahim CENGIZLER, Aysel SAHAN
10.00 -10.30	COFFEE BREAK
10.30- 12.00	Chairs: Prof. Dr. Ayfer PAZARBASI- Assoc. Prof. Dr. Sevcan TUG BOZDOGAN
OP-75	THE IMPORTANCE OF AQUATIC RECREATION AREAS IN URBAN LIVING AND THEIR CONTRIBUTION ON HEALTH Selcuk DUMAN, İbrahim CENGIZLER
OP-76	CHRONIC CAFFEINE CONSUMPTION CAUSE TO REDUCE NEUROGENESIS IN REM SLEEP DEPRIVATED RATS Leyla SAHİN, Özge Selin CEVİK, Dilan Deniz KOYUNCU, Neriman EZGIN
OP-77	EFFECT OF RYE TRANSLOCATION ON AGRONOMIC TRAITS OF BREAD WHEAT IN RECOMBINANT INBRED LINE POPULATION Mesut Ersin SONMEZ, Erdinc SAVASLI, Oguz ONDER, Nevzat AYDIN
OP-78	DETERMINATION OF THE HMW-GS IN LANDRACES AND MODERN CULTIVARS IN BREAD WHEAT Bedrettin DEMİR, Mesut Ersin SONMEZ, Mustafa ÇAKMAK, Nevzat AYDIN
OP-79	STATE OF AWARENESS ABOUT HEREDITARY BLOOD DISEASE OF SECONDARY EDUCATION STUDENTS Sedefgul YUZBASIOGLU ARIYUREK, Sule MENZILETOGLU YILDIZ, Pinar ETİZ, Meral MIRALOGLU, Neslihan BOYAN
OP-80	TUBERCULOSIS IN THE ELDERLY: THE EVALUATION OF 65 YEARS AND OLDER CASES REGISTRED IN ADANA KARSİYAKA TUBERCULOSIS DISPANSERY, 2013-2016 Pınar ETİZ
12.00-13.00	LUNCH

INTERNATIONAL CONGRESS OF HEALTH AND ENVIRONMENT

October 23-25, 2017

Adana-TURKEY

13.00-14.00	Chair: Assoc. Prof. Dr. Ersin NAZLICAN
OP-81	HEALTH POLICIES FROM PAST TO PRESENT <u>Irfan ERTEKIN</u>
OP-82	HISTOPATHOLOGICAL INVESTIGATION OF GLYPHOSATE TOXICITY IN THE MANTLE AND FOOT TISSUES OF <i>Melanopsis praemorsa</i> LINNAEUS, 1758 (GASTROPODA:PROSOBRANCHIA) <u>Birgul OTLUDIL, Ozlem DEMIRCI, Feysel CAKMAK, A. Ismail OZKAN</u>
OP-83	EFFECT OF QUERCETIN ON TOTAL OXIDANT / ANTIOXIDANT LEVEL IN RAINBOW TROUT (ONCORHYNCHUS MYKISS H., 1843) SERUM <u>Faruk ARA, Zafer DOGU, Erdinc SAHINOZ, Ismail KOYUNCU, Ozgur YUKSEKDAG</u>
OP-84	PURIFICATION AND CHARACTERIZATION OF THE CARBONIC ANHYDRASE ENZYME FROM GOAT LIVER AND INHIBITION EFFECTS OF SOME HEAVY METAL IONS ON ENZYME ACTIVITY <u>Cuneyt CAGLAYAN, Ilhami GULCIN</u>
14.00 -14.15	COFFEE BREAK
14.15- 15.30	Chair: Assoc. Prof. Dr. Ersin NAZLICAN
OP-85	THE DETECTION OF PESTICIDE RESIDUES IN VEGETABLES WITH SURFACE PLASMON RESONANCE SENSORS BASED ON MOLECULARLY IMPRINTING AND VERIFICATION STUDIES WITH LIQUID CHROMATOGRAPHY TANDEM MASS SPECTROMETRY (LC-MS/MS) <u>Oguz CAKIR, Fatma YILMAZ, Zubeyde BAYSAL, Adil DENIZLI</u>
OP-86	THE EFFECT OF CELTIS TOURNEFORTII ON TOTAL ANTIOXIDANT AND OXIDANT STATUS AGAINST CCL4-INDUCED HEPATOTOXICITY <u>Mehmet Ali TEMIZ, Atilla TEMUR, Mustafa SURUCU</u>
OP-87	INVESTIGATION ON ADSORPTION PROPERTIES OF MESOPOROUS MCM-41 FOR GLYPHOSATE-IPA: AN ORGANOPHOSPHORUS HERBICIDE <u>Birsen S. OKSAL, Yunus SENTURK</u>
OP-88	THE EFFECTS OF CURCUMIN TO GLUTATHIONE PEROXIDASE (GSH), MALONDIALDEHYDE (MDA) AND ADVANCED PROTEIN OXIDATION (AOPP) LEVELS AND SUPEROXIDE DISMUTASE (SOD) AND CATALASE (CAT) ACTIVITIES IN THE EXPERIMENTAL LIVER INJURY IN SWISS ALBINO MICE -FORMED BY DIETHYLNITROSAMINE (DEN) <u>Ramazan SERINER, Ramazan BILGIN, Yusuf Kenan DAGLIOGLU</u>
OP-89	DETERMINATION OF OUTDOOR DUST CONCENTRATIONS IN KONYA ORGANIZED INDUSTRIAL ZONE <u>Fatma KUNT, Sukran ERDOGAN, Cigdem ULUSOY</u>
OP-90	EFFICIENCY of POWER PLANTS with CARBON CAPTURE and STORAGE <u>Sırrı UYANIK, M. Yavuz SUCU, Orhan ALTURK</u>
15.30-16.30	Chair: Prof. Dr. Neslihan BOYAN
OP-91	RISK ANALYSIS OF HOSPITAL INFECTION; AHP AND TOPSIS METHOD <u>Gizem Gul KOC, Asli TOLU, Ali KOKANGUL</u>
OP-92	SOCIO-ECONOMIC ENVIRONMENTAL RELATION IN ASBESTE-RELATED MESOTHELIOMA <u>Gizem Gul KOC, Nergiz YILDIRIM, Ismail HANTA, Ali KOKANGUL</u>
OP-93	ORGANOPHOSPHATE (DDVP) INTOXICATION AND NEUROMUSCULAR EFFECT <u>Filiz KOC, Zeynep KEKEC, Mehmet YUZUGULLU</u>
OP-94	ATTITUDES OF PREHOSPITAL STAFF TO AMBULANCE LIGHT AND SIREN USAGE <u>Azade SARI, Secil TAYLAN</u>
OP-95	NEW GENERATION OF SUBSTANCE ABUSE: SYNTHETIC CANNABINOIDS <u>Azade SARI, Ersin NAZLICAN</u>

INTERNATIONAL CONGRESS OF HEALTH AND ENVIRONMENT

October 23-25, 2017

Adana-TURKEY

25 OCTOBER 2017 WEDNESDAY HALL B	
09.00-10.20	Chairs: Prof. Dr. Akgun YAMAN, Prof. Dr. AHMET SEBE
OP-96	CHROMIUM PHYTOTOXICITY TEST OF METAL COATING WASTEWATERS Sukru DURSUN, Zeynep Cansu AYTURAN
OP-97	A COMPARISON OF ACUTE TOXICITY OF CYPERMETHRIN ALONE AND SYNERGIZED WITH PIPERONYL BUTOXIDE TO THE MALE GUPPIES, (<i>POECILIA RETICULATA</i> PETERS, 1859) Mustafa CALISKAN
OP-98	ANTIOXIDANT EFFECT OF HONEY AND POLLEN ON LIPID PEROXIDATION IN CADMIUM ADMINISTERED RATS Halil SIMSEK, Mehtap OZCELIK, Osman GULER, Fulya BENZER, Mehmet CAY, Mesut AKSAKAL
OP-99	ANTIOXIDANT EFFECT OF NIGELLA SATIVA SEED ON LIPID PEROXIDATION IN LEAD ADMINISTERED RATS Osman GULER, Halil SIMSEK, Mehtap OZCELIK, Fulya BENZER, İzzet KARAHAN, Sezai KAPLAN
OP-100	THE LEVEL OF HEAVY METALS IN BREAST MILK IN KARABUK PROVINCE Namık BİLİCİ, Kubra DEMİR, Oznur Hayat OKTEM
OP-101	POTENTIAL HEALTH RISK OF POLYCYCLIC AROMATIC HYDROCARBONS (PAHs) IN PM2.5 SAMPLES ON DIFFERENT DEMOGRAPHICAL GROUPS Akif ARI, Pelin ERTÜRK ARI, Eftade O. GAGA
OP-102	HEALTH RISK ASSESSMENT OF SIZE SEGREGATED TOXIC METALS IN PM SAMPLES COLLECTED FROM A THERMAL POWER PLANT AREA, KUTAHYA Pelin ERTURK ARI, Akif ARI, Eftade O. GAGA
OP-103	TOXIC EFFECTS OF THIA CLOPRID AND D-TUBOCURARINE ON RANA RIDIBUNDA GASTROCNEMIUS MUSCLE: CONTRACTILE PROPERTIES Çağatay Han TURKSEVEN, Esra PEKOGLU, Yusuf CAMLICA, Ulku COMELEKOGLU
10.20 -10.30	COFFE BREAK
10.30-12.00	Chairs: Prof. Dr. Halil CAKAN, Assoc. Prof. Dr. Bertan YILMAZ
OP-104	THE APOPTOTIC EFFECTS OF WATER SOLUBLE FRACTIONS (WSF) OF CRUDE OIL ON 24 HPF ZEBRAFISH EMBRYOS Burak GOKCE, Ozlem ONEN, Mustafa KIRAN, Sema ISISAG UCUNCU
OP-105	EFFECTS OF PIPERONYL BUTOXIDE ON ACETYLCHOLINESTERASE INHIBITION CAUSED BY FENTHION IN THE LIVER OF <i>Oreochromis niloticus</i> Petek PINER BENLİ, Nevin UNER
OP-106	EFFECTS OF SILICA NANOPARTICLES ON AUDITORY SYSTEM Erkan OZBAY, Ulku COMELEKOGLU, Yusuf VAYISOGLU, Rabia BOZDOGAN, Onder ALBAYRAK, Burcu DEMIRBAG, Derya Umit TALAS
OP-107	AGRICULTURAL WORKERS OF PESTICIDE USE IN THE PROVINCE OF MERSIN INVESTIGATION OF THE LEVEL OF AWARENESS ABOUT THE HEALTH AND ENVIRONMENTAL EFFECTS Fatma ZENGİN, Mümin POLAT, Canan DEMİR BARUTCU, Serkan KOKSOY, Gulcihan Aybike DILEK
OP-108	INVESTIGATION OF THE EFFECTS OF COENZYME Q ON THE ACTIVITIES OF LIVER FREE RADICAL SCAVENGING ENZYMES IN TAXOL GIVEN MICE Gokhan COKSEN, Emine DIRAMAN, Fatma Gonul SOLMAZ
OP-109	DEVELOPMENTAL TOXICITY IN ZEBRAFISH EMBRYOS EXPOSED TO FONOFOS Sezgi ARMAN, Sema ISISAG UCUNCU

INTERNATIONAL CONGRESS OF HEALTH AND ENVIRONMENT

October 23-25, 2017

Adana-TURKEY

OP-110	EFFECTS OF THYMOL AND CARVACROL, CONSTITUENTS OF THYME (<i>Thymus vulgaris</i> L.) ON SERUM IRON IN <i>Oreochromis niloticus</i> <u>Tuzun AYTEKIN</u>, Hikmet Yeter COGUN, OZGE TEMIZ, Hazal SAG VARKAL, Ferit KARGIN
OP-111	EFFECTS OF BISPEHOL A AND SALINITY ON CERATOPHYLLUM DEMERSUM L., A ROOTLESS AQUATIC MACROPHYTE <u>Serap SAHIN YIGIT</u>, Gulsum DOGANCAI, Didem KOCUM, Muhittin DOGAN
OP-112	EFFECT OF LAMBDA-CYHALOTHRIN, A PYRETHROID PESTICIDE, ON TRIACYLGLYCEROL FRACTION IN THE LIVER OF OREOCHROMIS NILOTICUS. <u>Murat YOLCU</u>, Mehmet BASHAN, Veysi KIZMA, Ismail YENER, Elif Ipek SATAR
12.00-13.00	LUNCH
13.00-15.00	Chair: Assoc. Prof. Dr. Cagatay Han Bekir ERSU
OP-113	A SOLUTION FOR URBAN RENEWAL WASTE PROBLEM: RECYCLED CONSTRUCTION MATERIALS <u>Mustafa KARA</u>, Yasemin KILIC, Aylin SAHIN, Bahattin Murat DEMIR
OP-114	WASTEWARE BENCHMARK INDICATORS FOR SOLID WASTE MANAGEMENT ANALYSIS <u>Nesli AYDIN</u>, Semih KARCIGA
OP-115	SEPARATING AND RECYCLING OF SANLIURFA - HARRAN REFUGEE CAMP SOLID WASTES <u>Hakki GULSEN</u>, Mehtap YUCEL
OP-116	SEPARATING AND RECYCLING OF SANLIURFA - VIRANSEHIR AND CEYLANPINAR REFUGEE CAMPS SOLID WASTES <u>Hakki GULSEN</u>, Seher KAMAR, Remziye ESEN
OP-117	E-WASTES, DISPOSAL AND ENVIRONMENTAL EFFECTS <u>Betul GONCU</u>, Hakki GULSEN
OP-118	SOLID WASTES PRODUCED IN A TURKISH STATE HOSPITAL KITCHEN <u>Aysun YUKSEL</u>, Aydan ERCAN
OP-119	THE EFFECTS OF 20 DAYS SWIMMING EXERCISES ON SOME PHYSICAL AND PHYSIOLOGICAL PARAMETERS IN IDEAL ENVIRONMENTAL CONDITIONS <u>Emir Ibrahim ISIK</u>, Ali OZERDINC
OP-120	EXAMINING THE RECOVERY POSSIBILITIES OF CONSTRUCTION AND DEMOLITION WASTES IN TURKEY <u>Burcu SALGIN</u>, Tulay TIKANSAK KARADAYI, Nilay COSGUN, Cahide AYDIN IPEKCI
OP-121	HYDROELECTRIC POWER PLANTS ON MURAT RIVER, TURKEY <u>Mucahit EROGLU</u>, Mustafa DUSUKCAN, Mehmet Zulfu COBAN, Dursun SEN
OP-122	DETECTED EXOTIC AND INVASIVE SPECIES IN SUSUZ AND AYGIR LAKES (KARS), CILDIR AND AKTAS LAKES (ARDAHAN) <u>Mehmet Ali KIRPIK</u>
15.00 -15.30	COFFEE BREAK
15.30-17.00	Chair: Prof. Dr. Hasan FENERCIOGLU
OP-123	THE ROLE OF ENVIRONMENT IN PROVIDING FOOD SAFETY <u>Umit GURBUZ</u>, H.Ahu KAHRAMAN, Duygu KULCU BALPETEK
OP-124	INVESTIGATION OF THE HEAVY METAL CONTENT OF BEANS OFFERED FOR SALE IN KARAMAN PROVINCE <u>Fevzi KILICEL</u>, H. Sibel KARAPINAR
OP-125	DOES GENDER PLAY A ROLE ON THE EFFECT OF MONOSODIUM L-GLUTAMATE ON ANXIETY, REFERENCE AND WORKING MEMORY AND ADDICTION IN RATS? <u>Kamile YAZGAN</u>, Asuman GOLGELI, Munira Omar SALIM

INTERNATIONAL CONGRESS OF HEALTH AND ENVIRONMENT

October 23-25, 2017

Adana-TURKEY

OP-126	A STUDY ON THE USE OF LIQUIDAMBAR ORIENTALIS RESIN AS A NATURAL COATING Sare Yilmaz OCAKLIOGLU, Gokhan YALI, Huzeyfe SAGIN, Namik BILICI
OP-127	EFFECTS ON THE SERUM HOMOCYTENE LEVELS OF NIGELLA SATIVA OIL IN METABOLIC SYNDROME RATS Naci Omer ALAYUNT, Bilal USTUNDAG
OP-128	THE EFFECT OF NIGELLA SATIVA OIL ON SERUM LIVER ENZYMES IN THE RAT INDUCED METABOLIC SYNDROME Naci Omer ALAYUNT, Bilal USTUNDAG
25 OCTOBER 2017 HALL C	
13.00-14.10	Chairs: Prof. Dr. Ismail HANTA, Assoc. Prof. Siddik CINDORUK
OP-129	MODELLING THE ADVERSE HEALTH EFFECTS OF ROAD TRAFFIC NOISE: A CASE STUDY IN ADANA, BULENT ANGIN BOULEVARD Muzaffer YUCEL, Baris KAHVECI, Deniz COLAKKADIOGLU
OP-130	THE EVALUTION OF NOISE LEVELS IN INTENSIVE CARE UNITS OF HOSPITAL Ender CETIN, Fatma AZIZOGLU, Bilge HAPCIOGLU
OP-131	THE EFFECT OF SOUND WAVES ON SOME FRUIT QUALITY CHARACTERISTICS OF TOMATO Halil OZKURT, Ozlem ALTUNTAS
OP-132	STUDY OF FOLLOWING RIDGE TRANSPARENT REMOVALS WITH SATELLITE DATA AND RESEARCH ON THE EFFECTS OF HEALTH: ISTANBUL SAMPLE Mehtap YUCEL, Hakki GULSEN
OP-133	INVESTIGATION OF INITIAL FINDINGS OF INDOOR AIR QUALITY IN TERMS OF PM 10 and PM 2.5 IN A HOSPITAL: A CASE STUDY FROM SANLIURFA PROVINCE Tuba RASTGELDI DOGAN, Kemalettin PARMAKSIZ, Merve Nur DINC
OP-134	EFFECTS OF DIESEL EXHAUST PARTICLES ON CILIARY BEAT FREQUENCY, RELEASE OF CAMP AND INFLAMMATORY CYTOKINES FROM BRONCHIAL EPITHELIAL CELLS CULTURED IN PATIENTS WITH AND WITHOUT COPD Demet Tasdemir KAHRAMAN, Sedat ILHAN, Hasan BAYRAM
OP-135	POLYCHLORINATED BIPHENYLS (PCB)s LEVELS and SEASONAL VARIATION in an URBAN AREA of BURSA S.Siddik CINDORUK, A. Egemen SAKIN, Yücel TASDEMIR
14.10-14.30	COFFE BREAK
14.30-15.40	Chair:Assoc. Prof. Dr. Oya Berkay KARACA
OP-136	DETECTION OF THE BLA _{TEM} AND TETA GENES IN SALMONELLA SPP. FROM MEAT SAMPLES Fatma OZDEMIR, Seza ARSLAN
OP-137	DETERMINATION OF FIPRONIL RESIDUE IN CHICKEN EGG SAMPLES USING GC/MS Seyda KIVRAK, Tolga GOKTURK, Ibrahim KIVRAK
OP-138	DETERMINATION OF THE CHEMICAL CONTENT OF MOUNT ARARAT (AĞRI DAĞI) FLOWER HONEY USING UPLC-ESI-MS/MS Seyda KIVRAK, Tolga GOKTURK, Ibrahim KIVRAK
OP-139	AFTER POPPY SEED PASTE CONSUMPTION TOXICOLOGYCAL ANAYSIS IN URINE FOR MORPHINE AND THEBAINE Emine OZBUNAR, Melike AYDOGDU, Rukiye DOGER, Halil Ibrahim BOSTANCI, Serap Annette AKGUR
OP-140	TOXICOLOGICAL ANALYSIS OF COLD BEVERAGES WITH HEMP VISUAL: ICE TEA AND ENERGY DRINKS Melike AYDOGDU,Rukiye DOGER, Serap Annette AKGUR

INTERNATIONAL CONGRESS OF HEALTH AND ENVIRONMENT

October 23-25, 2017

Adana-TURKEY

OP-141	IS THERE A NEED FOR HEALTH AND NUTRITION PRESENTATIONS FOR ADULTS? <u>Sukran CAKIR ARICA</u>
OP-142	FOOD ADDITIVES AND PACKAGING MATERIALS USED IN SOME PREPERAD FOODS <u>Sukran Cakır ARICA</u> , <u>Selda OZ</u> , <u>Ayse OZYILMAZ</u> , <u>Sevil DEMIRCI</u>
25 OCTOBER 2017 HALL D	
13.00-15.00	Chairs: Prof. Dr. Fuat BUDAK, Prof. Dr. Fatma CEVIK
OP-143	SIZE FREQUENCY AND LENGTH-WEIGHT RELATIONSHIPS OF THREE CEPHALOPODS, COMMON EUROPEAN SQUID, <i>LOLIGO VULGARIS</i> , COMMON CUTTLFISH, <i>SEPIA OFFICINALIS</i> , AND COMMON OCTOPUS, <i>OCTOPUS VULGARIS</i> FROM THE YUMURTALIK COVE (ISKENDERUN BAY, NORTH-EASTERN MEDITERRANEAN, TURKEY) <u>Canan TURELI</u> , <u>Irem Nur YESILYURT</u> , <u>Hacer YELDAN</u> , <u>Erhan AKAMCA</u> , <u>Sedat GUNDOGDU</u>
OP-144	IS IT PROPER TO START FOLIC ACID ON ALL PREGNANT WOMEN? <u>Mustafa CANBOLAT</u> , <u>Mehmet TECELLIOGLU</u> , <u>Davut OZBAG</u> , <u>Turgay KARATAS</u> , <u>Mehmet KARATAS</u>
OP-145	VISUAL COMMUNICATION IN URBANIZATION: EXTERNAL WALL ISSUE <u>Cigdem TEKIN</u> , <u>Halit BEYAZTAS</u>
OP-146	DETERMINING THE KNOWLEDGE LEVELS OF THE FIRST AID FOR THE PERSONNEL WORKING IN THE FIRE FIGHTING; THE EXAMPLE OF KAHRAMANMARAS PROVINCE <u>Meliksah TURAN</u> , <u>Yucel BULUT</u> , <u>Goksel OZTURK</u> , <u>Saime SAHINOZ</u>
OP-147	THE EFFECT OF OBESOGENIC ENVIRONMENT ON ENERGY EXPENDITURE <u>Aysun YUKSEL</u> , <u>Hulya YILMAZ ONAL</u> , <u>Evan YILMAZ AKYUZ</u>
OP-148	HOUSING CHARACTERISTICS AND PERCEIVED HEALTH <u>Alpaslan TURKKAN</u> , <u>Kayihan PALA</u>
OP-149	EVALUATION OF RELATIONS BETWEEN HOUSING CONDITIONS AND HEALTH: THE CASE OF MEZITLI DISTRICTS <u>Ahmet Oner KURT</u> , <u>Ali Cenap YOLOGLU</u> , <u>Yasemin Sarıkaya LEVENT</u> , <u>Tolga LEVENT</u> , <u>Sinan BURAT</u> , <u>Servet KARACA</u> , <u>Serkan GOKALP</u>
OP-150	RELATIONSHIP BETWEEN HEALING AND ENVIRONMENT: HEALING GARDENS <u>Zerrin SOGUT</u> , <u>Deniz COLAK KADIOGLU</u> , <u>Barış KAHVECI</u>
OP-151	INVESTIGATION OF PLANT USE IN HOSPITAL GARDENS IN BURSA <u>Nilufer SEYIDOGLU AKDENIZ</u> , <u>Dilan DENIZ</u> , <u>Ceren DALGIC</u> , <u>Murat ZENCIRKIRAN</u>
OP-152	AN INVESTIGATION ON TOP POLLENS & POLLINATION BIOMORPHOLOGY OF <i>B. terrestris</i> L. 1758 (INSECTA:HYMENOPTERA) <u>Aysel KEKİLLİOĞLU</u> , <u>Ebru KUNDURACI</u>
OP-153	FISH FAUNA DISTRIBUTION OF LOTIC AND LENTIC ECOSYSTEMS IN BİLEÇİK PROVINCE <u>Vedat YEGEN</u> , <u>Soner ÇETINKAYA</u> , <u>Rahmi UYSAL</u> , <u>Fuat BILGIN</u> , <u>Mehmet CESUR</u>
15.00-15.30	COFFE BREAK
15.30-16.40	Chairs: Prof. Dr. Erkan KOZANOGLU, Assoc. Prof. Dr. Gonca KARAKUS
OP-154	EFFECTS OF SMOKING ON DISORDER FEATURES AT MAJOR DEPRESSIVE PATIENTS <u>Mehmet Emin DEMIRKOL</u> , <u>Lut TAMAM</u>
OP-155	EFFECTS OF TREADMILL EXERCISE ON ELECTRODERMAL ACTIVITY IN SOCIAL ISOLATED RATS <u>Seval KELOGLAN MUSUROGLU</u> , <u>Leyla SAHI</u> , <u>Ozge Selin CEVIK</u>

INTERNATIONAL CONGRESS OF HEALTH AND ENVIRONMENT

October 23-25, 2017

Adana-TURKEY

OP-156	THE FACTORS AFFECTING FOOT ANTHROPOMETRY <u>Sema OZANDAC POLAT, Ahmet Hilmi YUCEL</u>
OP-157	FACTORS AFFECTING THE USE OF ADDICTIVE SUBSTANCE IN VOCATIONAL SCHOOL STUDENTS HEALTH SERVICES <u>Meral MIRALOGLU, Sedefgul YUZBASIOĞLU ARIYUREK, Pınar ETİZ, Azize BATUN</u>
OP-158	EVALUATION OF PERCEIVED EMOTIONAL ABUSE IN ELDERLY PEOPLE LIVING IN NURSING HOME <u>Saliha Bozdogan YESİLOT, AyseInel MANAV, Ebru GOZUYESİL</u>
OP-159	DETERMINATION OF THE COGNITIVE STRUCTURES OF SCIENCE TEACHER CANDIDATES IN RELATION TO ENVIRONMENTAL PROBLEMS THROUGH WORD ASSOCIATION TEST TECHNIQUES <u>Pınar FETTAHLIOĞLU, Nurseren OZMANSUR</u>
OP-160	DEPRESSION OF TAKING RADIOTHERAPY BONE METASTASIS PATIENTS <u>Feryal KARACA, Selahattin MENTES</u>

INTERNATIONAL CONGRESS OF HEALTH AND ENVIRONMENT

October 23-25, 2017

Adana-TURKEY

POSTER PRESENTATIONS

Number	TITLE/AUTHORS
23 OCTOBER 2017- MONDAY	
16. ⁰⁰ -18. ⁰⁰	Chairs: Prof. Dr. Ayfer PAZARBASI, Prof. Dr. Okan OZKAYA
PP-1	THE CONTAMINATION OF FIPRONIL IN CHICKEN EGGS <u>Sema CELIK</u>
PP-2	MARKER GENE EXCISION FROM TRANSGENIC PLANTS USING FLP/FRT SYSTEM <u>M. AYDIN AKBUDAK</u>
PP-3	COPPER-INDUCED GENOTOXICITY IN <i>ALLIUM CEPA</i> L. (AMARYLLIDACEAE) <u>Kultigin CAVUSOGLU, Kursad YAPAR, Emine YALCIN</u>
PP-4	MICROALGAL LIPID PRODUCTION AND EVALUATION FOR BIODIESEL PRODUCTION <u>Emine YALCIN, Ali ACAR, Kultigin ÇAVUŞOĞLU</u>
PP-5	THE AFFECTS OF PESTİCİDE USE ON HUMAN HEALTH <u>Onur SOYSAL, Dilek BOSTAN BUDAK</u>
PP-6	MICROBIOLOGICAL PROPERTIES OF BOTH DRINKING AND USAGE WATERS IN CORUM <u>Zubeyir TUNCEL, Seda MESCI, Ruveyda TURBAY</u>
PP-7	IDENTIFICATION OF CARBON FOOTPRINTS OF STUDENTS IN A FACULTY OF MEDICINE <u>Fatma AZIZOGLU, Betül SONMEZ, Bilge HAPCIOGLU</u>
16. ⁰⁰ -18. ⁰⁰	Chairs: Assoc. Prof. Dr. Funda Gulay KADIOGLU
PP-8	ENVIRONMENT POLLUTION AND ETHICS <u>Hesna Gulsen AKKAYA</u>
PP-9	ASSESSING MASS MEDIA COVERAGE OF GREEN ROAD PROJECT WITH REGARDS TO ENVIRONMENTAL ETHICS <u>Belkis BIRDEN</u>
PP-10	EVALUATION OF SURFACE WATER QUALITY BY USING HEAVY METAL POLLUTION INDEX MODEL <u>Ozlem TUNC DEDE</u>
PP-11	PHYSICOCHEMICAL PROPERTIES OF BOTH DRINKING AND USAGE WATERS IN CORUM <u>Zubeyir TUNCEL, Emre BEZGIN, Cem Ozan ERYUCEL</u>
PP-12	DETERMINATION OF WATER QUALITY LEVELS OF KARASU (ARABAN, GAZIANTEP) AND MERZİMEN (YAVUZELI, GAZIANTEP) STREAMS <u>Onur BAYKAL, Demet DOGAN, Muhittin DOGAN</u>
PP-13	HEALTH IMPACT ASSESSMENT (HIA): A NEW IMPACT ASSESSMENT SYSTEM IN DECISION MAKING <u>Nuriye SAY, Nermin Merve YALCINKAYA, Gulay TOKGOZ</u>
PP-14	BIOREMEDIATION OF NITROGENOUS COMPOUNDS FROM WASTEWATERS VIA BIOSORPTION: MICROALGAE HAEMATOCOCCUS PLUVIALIS MODEL <u>Emine YALCIN, Ali ACAR, Kultigin CAVUSOGLU</u>

INTERNATIONAL CONGRESS OF HEALTH AND ENVIRONMENT

October 23-25, 2017

Adana-TURKEY

16.⁰⁰-18.⁰⁰	Chairs: Prof. Dr. Dilek BOSTAN BUDAK, Assit. Prof. Dr. Sevda OCAK
PP-15	PYROLYSIS OF COMPOSITE PACKAGING WASTES WITH SOME ADDITIVE MATERIALS Mufide BANAR, Aysun OZKAN, Zerrin GUNKAYA, Ece YAPICI
PP-16	ELEMENTAL ANALYSIS METHODS FOR VEGETABLE SAMPLES WITH ICP-MS Murat KILIC, Ali Riza KUL, Serpil KILIC1
PP-17	THE EFFECT OF AQUACULTURAL FEED ON THE ENVIRONMENT EBRU YILMAZ, CENGİZ KOC
PP-18	CLOSED IRRIGATION SYSTEM TO SAVE WATER AND PROTECT ENVIRONMENT Dilek BOSTAN BUDAK, Samet SALABGIR
PP-19	COLOR REMOVAL OF PROCION YELLOW H-EXL TEXTILE DYE BY ELECTROCOAGULATION USING IRON ELECTRODES AND DETERMINATION OF ENERGY CONSUMPTION Seda SABUNCU, Bahadır K. KORBAHTI
PP-20	COMPARISON OF DIFFERENT RAINWATER HARVESTING SYSTEMS BY USING LIFE CYCLE ASSESSMENT Mufide BANAR, Zerrin GUNKAYA, Aysun OZKAN, Ece YAPICI
PP-21	BIOSORPTION OF A SYNTHETIC AZO DYE USING SAWDUST BIOMASS OF HORNBEAM TREE AS A SUSTAINABLE BIOSORBENT MATERIAL Fatih DENİZ, Hakan YILDIZ
PP-22	ADSORPTION POTENTIAL OF GYPSUM AS A LOW-COST ADSORBENT FOR TREATMENT OF COLORED WASTEWATER Fatih DENİZ, Hakan YILDIZ
PP-23	A RİVIEW ON ABILITY OF THE BIOREMEDIATION PROCESSES OF CRUDE PETROLEUM-OIL IN CONTAMINATED WATER Mosstfa MAAROOF, Yagmur UYSAL
PP-24	EFFECT OF DIFFERENT MYCORRHIZA SPECIES ON SATSUMA MANDARIN (CITRUS UNSHIU MARC.) TREES YIELD AND NUTRITION Emin SAYINER, Mehmet ISIK, Alexandra BYKOVA, İbrahim ORTAS
PP-25	INVESTIGATION OF IN-VITRO ANTIBACTERIAL ACTIVITY OF VARIOUS DISINFECTANTS AND ANTISEPTICS Sumru CİTAK, Aysun KOCA
PP-26	OPTIMIZATION OF MEDIUM COMPONENTS FOR PHYTASE PRODUCTION FROM ENTEROBACTER SP. Afet ARKUT OZYAPICI, Sadik DINCER, Melis SUMENGEN OZDENEFİ, Fikret BUYUKKAYA KAYIS, Hatice Aysun MERCİMEK TAKCI
PP-27	CURRENT APPROACH TO A ZOONOTIC DISEASE IN TURKEY: "BRUCellosIS" Pinar ETİZ
PP-28	CHELATING AGENT GRAFTED HYDROGEL FOR EFFECTIVE REMOVAL OF URANYL IONS Zeynep Mine HASDEMİR, Halil İbrahim ULUSOY, Selçuk SIMSEK
PP-29	THE EFFECT OF HIGH VOLTAGE LİNES ON THE PHENOLOGICAL AND POMOLOGICAL DEVELOPMENT OF THE FRUITS OF SWEET CHERRY, EARLY BURLAT Aysegul Esra GOLCU, Yusuf NİKPEYMA
PP-30	COLLECTION OF THE PERSONAL DADDY OF THE PATIENTS WHO UNDERWENT BONE MINERAL DENSITOMETRY IN OUTSKIRTS OF MERSİN Harika TOPAL ONAL, Sevin COSAR AYAZ, Umit YASAR AYAZ, Derya Deniz KANAN
PP-31	ECOLOGICAL PATHOLOGY OF HIRUDOTHERAPY Aysel KEKİLLİOĞLU, Fatoş Cansu CERİT
PP-32	INVESTIGATION OF MEDICAL WASTE MANAGEMENT AND DISPOSAL PROCESS: KONYA EXAMINATION Fatih SUNBUL, Ercan ODABASIOĞLU, Zeynettin KASIRGA, Tahir DEDEOĞLU

INTERNATIONAL CONGRESS OF HEALTH AND ENVIRONMENT

October 23-25, 2017

Adana-TURKEY

24 OCTOBER 2017- TUESDAY	
16.⁰⁰-18.⁰⁰	Chairs: Prof. Ahmet SEBE, Assoc. Prof. Dr. Ersin NAZLICAN
PP-33	CHIRAL DISCRIMINATION PROPERTIES OF CHIRAL CALIX[4]ARENE DERIVATIVES FOR ASCORBIC ACID Merve AKPINAR, Farabi TEMEL, Begum TABAKCI, Serkan ERDEMIR, Mustafa TABAKCI
PP-34	SOCIO-PSYCHOLOGICAL PROBLEMS OF FOREST HARVESTING WORKERS: A CASE STUDY Erhan CALISKAN
PP-35	ANTIMICROBIAL RESISTANCE AND SENSITIVITY PROFILE OF PSEUDOMONAS AERUGINOSA AND PREVALENCE OF MULTIPLE ANTIBIOTICS RESISTANT (MAR) IN TRACHEAL ASPIRATES. N Ceyhan GUVENSEN, D KESKIN, F SANKUR
PP-36	THE RELATIONSHIP BETWEEN STATE AND TRAIT ANXIETY LEVELS AND VITAMIN D LEVELS OF UNIVERSITY STUDENTS Derya Deniz KANAN, Adnan UNALAN
PP-37	EFFECTS OF GALLIC ACID ON PLASMA THIOL/DISULPHIDE HOMEOSTASIS BALANCE OF RAINBOW TROUT (ONCHORHYNCHUS MYKISS H., 1843) Zafer DOGU, Erdinc SAHINOZ, Faruk ARAL, İsmail KOYUNCU, Ozgur YUKSEKDAG
PP-38	HEALTH RISKS RELATED TO COOKING FUMES EXPOUSURE AMONG KITCHEN WORKERS Semra NAVRUZ VARLI, Saniye BILICI
PP-39	PATENT OF VOLATILE OIL PRODUCTION TECHNOLOGY Ayşe EVEREST, Elif Ayse ERDOGAN ELIUZ
PP-40	OCCUPATIONAL DISEASES IN CATERING EMPLOYEES: A PILOT SUDY OF ANKARA CITY Suleyman KOSE, Saniye BILICI
PP-41	ALUMINUM TOXICITY-INDUCED ALTERATIONS IN ROOT TIP MERISTEMATIC CELLS OF ALLIUM CEPA L. (AMARYLLIDACEAE) Kultigin CAVUSOGLU, Ali ACAR, Emine YALCIN
PP-42	NEGATIVE ENVIRONMENT: CHILDREN ARE UNDER THE FULL OF ENVIROMENTAL RISK Yasar TOPAL, Hatice TOPAL, Betul BATTALOGLU INANC
PP-43	METAL BIOACCUMULATION/TOXICITY TEST FOR METAL INDUSTRY WASTEWATERS Zeynep Cansu AYTURAN, Fatma KUNT, Sukru DURSUN
PP-44	ENVIRONMENTALIST PRODUCTION OF ZnSe THIN FILMS VIA CHEMICAL BATH DEPOSITION Sinan TEMEL, Fatma Ozge GOKMEN, Elif YAMAN
PP-45	THE EFFECTS OF OBESITY AND AGE ON TOTAL ANTIOXIDANT/OXIDANT STATUS IN HEALTHY ADULTS Sule MENZİLETOGLU YILDIZ, Derya KOCAMAZ, Hikmet Yeter COGUN, Birol GUVENC
PP-46	PURIFICATION AND CHARACTERIZATION OF CARBONIC ANHYDRASE ENZYME FROM GOAT KIDNEY: THE TOXICOLOGICAL IMPACTS OF SOME HEAVY METALS ON ENZYME ACTIVITY Cuneyt CAGLAYAN, İlhami GULCIN
PP-47	ACUTE TOXICITY OF INSECTICIDES ON AQUATIC ORGANISMS (BIOASSAY TESTS ON C.U. FISHERIES FACULTY) Cansev AZGIN, Munir Ziya Lugal GOKSU
PP-48	INVESTIGATION OF IMIDACLOPRIDIN TOXICITY THAT CAUSE HISTOPATHOLOGICAL CHANGES IN HEPATOPANCREASES OF Melanopsis praemorsa LINNAEUS, 1758 (GASTROPODA:PROSOBRANCHIA) Lokman DAMAR, Birgul OTLUDIL

INTERNATIONAL CONGRESS OF HEALTH AND ENVIRONMENT

October 23-25, 2017

Adana-TURKEY

PP-49	CADMIUM TOXICITY THAT CAUSE HISTOPATHOLOGICAL CHANGES IN <i>Lymnaea stagnalis</i> LINNAEUS, 1758 (GASTROPODA:PULMONATA) Birgul OTLUDIL, Serpil BURCUN KARAKAS
PP-50	EFFECTS OF ALUMINIUM TOXICITY ON SESAMUM INDICUM Selin ERDINC, Muhittin DOGAN
PP-51	PHYSIOLOGICAL RESPOSES OF <i>OCIMUM BASILICUM</i> VAR. <i>PURPURASCENS</i> TO ALUMINIUM TOXICITY Pinar AKSOY, Muhittin DOGAN
PP-52	BIOCHEMICAL COMPOSITION AND HEALTH EFFECTS OF HYMENOPTERA (INSECTA: ARTHROPODA) VENOM Aysel KEKILLIOGLU
PP-53	THE EFFECTS OF BURNİNG STUBBLE ON THE ENVİRONMENT Samet SALABGİR, Dilek BOSTAN BUDAK, Tugce KAYA
PP-54	PLASTICS Necla BARLIK, Mustafa AKGUN
PP-55	ALLELOPATHIC EFFECTS OF ANTHEMIS HAUSSKNECHTII BOISS. ET. REUTER VE ROSMARINUS OFFICINALIS L. EXTRACTS ON SEED GERMINATION AND GROWTH OF BREAD WHEAT (TRITICUM AESTIVUM L.) Hande ZEREN, Mustafa PEHLIVAN, Serap SAHİN YIGİT, Muhittin DOGAN
PP-56	THE EFFECTS OF QUINALPHOS ON ZEBRAFISH LIVER ORGANOTYPIC TISSUE CULTURE Burak GOKCE, Ozlem ONEN, Mustafa KIRAN, Sema Isisag UCUNCU
PP-57	ALLANTOIN METABOLISM AND BIOACTIVITY IN LIVING THINGS Zeliha SELAMOGLU, Cihan DUSGUN
PP-58	CALLUS INDUCTION AND OPTİMİZATION OF TISSUE CULTURE CONDITIONS IN SMALL FLOWERED WILLOW HERB (EPILOBIUM PARVIFLORUM SCHREB) M. Aydın AKBUDAK
16. ⁰⁰ -18. ⁰⁰	Chair: Assit. Prof. Dr. Sevda OCAK
PP-59	THE EFFECT ON THE DIVERSITY OF SPECIES ILLEGAL FISHING ACTIVITIES IN ASI RIVER Sevil DEMIRCI, Ayse OZYILMAZ, Sukran CAKIR ARICA, İbrahim MICOOGULARI
PP-60	AN APPROACH FOR INCREASING BIOLOGICAL DIVERSITY IN THE CITIES: BIRD AND BUTTERFLY FRIENDLY LANDSCAPE DESIGNS Hakan DOYGUN, Seniha KILINC
PP-61	DEVELOPING LANDSCAPE PLANNING AND DESIGN PRINCIPLES FOR THE PROTECTION OF URBAN STREAMS: A CASE STUDY IN THE CITY OF KAHRAMANMARAS Hakan DOYGUN, Dilay ZULKADIROGLU
PP-62	THE ROLE OF GREEN AREAS FOR IMPROVING URBAN MICROCLIMATE Neslihan DOYGUN
PP-63	APPLYING ECOSYSTEM SERVICES APPROACH FOR SUSTAINABLE RURAL DEVELOPMENT: THE CASE OF ADANA, KARAISALI Gulay TOKGOZ, Nuriye SAY
PP-64	ENERGY EFFICIENCY and MANAGEMENT for ENERGY SECTOR Zeynep ZAIMOGLU, Reyhan ERDOGAN, Orhan ALTURK
PP-65	NEW BIOFUEL TECHNOLOGY Zeynep ZAIMOGLU, Orhan ALTURK
PP-66	ASSESSMENT OF POTENTIAL SOIL EROSION WITH RUSLE MODEL: A CASE STUDY OF SALDA LAKE-BURDUR BASIN Hakan OGUZ, Kivanç YUKSEL
PP-67	SAFE FOOD HEALTHY HUMAN Fatih Ramazan İSTANBULLUGİL, Umit GURBUZ
PP-68	EVALUATION OF POMOLOGICAL AND MORPHOLOGICAL CHARACTERISTICS AND CHEMICAL COMPOSITIONS OF LOCAL PEAR VARIETIES (<i>Pyrus Communis</i> L.) GROWN IN GUMUSHANE, TURKEY Ozgun KALKISIM, Zuhul OKCU, Besim KARABULUT, Duygu OZDES, Celal DURAN

INTERNATIONAL CONGRESS OF HEALTH AND ENVIRONMENT

October 23-25, 2017

Adana-TURKEY

PP-69	ASSESSMENT OF HEAVY METAL AND MINERAL ELEMENT CONTENTS OF MULBERRY SAMPLES GROWN IN GUMUSHANE PROVINCE Duygu OZDES, Ozgun KALKISIM, Cemalettin BALTACI, Celal DURAN
PP-70	ACCUMULATION OF HEAVY METALS IN ACACIA (<i>Robinia pseudoacacia</i> L.) DEPENDING ON AIR POLLUTION IN GUMUSHANE Duygu OZDES, Celal DURAN, Ozgun KALKISIM, Yener TOP
PP-71	ASSESSMENT OF EQUILIBRIUM AND KINETICS PARAMETERS OF METHYLENE BLUE ADSORPTION ONTO NATURAL AND ACID MODIFIED BEECH SAWDUST Duygu OZDES, Ozgun KALKISIM, Yener TOP, Celal DURAN
PP-72	REMOVAL OF INDIGO CARMINE FROM AQUEOUS SOLUTIONS USING NATURAL AND H ₂ SO ₄ MODIFIED PLANE (<i>Platanus orientalis</i> L.) SAWDUST Duygu OZDES, Ozgun KALKISIM, Yener TOP, Celal DURAN
PP-73	LIFESTORY OF A SLICE OF BREAD FROM CRADLE TO GRAVE: COMPETENCE OF EARLY CHILDHOOD TEACHER CANDIDATES Elvan SAHIN, Nur ALACAM
25 OCTOBER 2017 WEDNESDAY	
15.⁰⁰-17.⁰⁰	Chair: Assist.Prof. Sewda OCAK
PP-74	PREVENTION AND CONTROL OF CRONOBACTER SAKAZAKII INFECTIONS IN INFANTS Semra NAVRUZ VARLI, Saniye BILICI
PP-75	HEALTHY INDIVIDUAL, BUT WHY? Betul BATTALOGLU INANC, Hatice TOPAL, Yasar TOPAL
PP-76	FUNCTIONAL PROPERTIES AND NUTRITIONAL QUALITY OF WHEY PROTEINS Mostafa SOLTANI, Dilek SAY, Nuray GUZELER
PP-77	POSSIBLE EFFECTS ON HUMAN HEALTH OF CYANOTOXINS IN SEAFOOD Soner CETINKAYA
PP-78	FATTY ACID COMPONENTS OF SEAFOOD CAUGHT ALONG THE BLACK SEA Ayşe OZYILMAZ, Ece KILIC, Sevil DEMIRCI, Sukran CAKIR ARICA, Ibrahim MICOOGULARI
PP-79	DETECTION OF BIOFILM FORMATION AND BIOFILM-ASSOCIATED GENES IN SALMONELLA SPP. FROM MEAT SAMPLES Seza ARSLAN, Fatma OZDEMIR
PP-80	FLAGELLIN GENE AS A VIRULENCE FACTOR OF AEROMONAS SPP. FROM FISH AND GROUND BEEF Seza ARSLAN, Hafize Gizem ERTURK, Fatma OZDEMIR
PP-81	GENOTYPING OF CRONOBACTER SPP. AS AN EMERGING PATHOGEN IN READY-TO-EAT FOOD Seza ARSLAN, Hafize Gizem ERTURK, Fatma OZDEMIR
PP-82	ANTIMICROBIAL ACTIVITY OF THE SUMMER SAVORY (<i>Satureja hortensis</i> L.) PLANT FOUND IN NORTHERN TURKEY Esmâ Hande ALICI, Gulnur ARABACI
PP-83	SOME KINETIC PROPERTIES OF THE BORAGE (<i>Trachystemon orientalis</i> L.) PLANT FOUND IN NORTHERN TURKEY Esmâ Hande ALICI, Gulnur ARABACI
PP-84	MICROORGANISMS ARE CAUSED DETERIORATION OF MILK PUDDINGS Nuray GUZELER, Emel Mine ESMEK
PP-85	CUISINE CULTURE IN OSMANIYE Nuray GUZELER, Emel Mine ESMEK
PP-86	EVALUATION OF FOOD SECURITY AND HYGIENE CONDITIONS OF SCHOOL CANTEENS IN A DISTRICT Leyla UCES HARMANOGULLARI, Gulcin YAPICI
PP-87	CRITICAL MOLECULES: "ANTIOXIDANTS" Gonul F. SOLMAZ, Emine DIRAMAN, Banu EREN, Zafer EREN

INTERNATIONAL CONGRESS OF HEALTH AND ENVIRONMENT

October 23-25, 2017

Adana-TURKEY

PP-88	HEALTH RISKS RELATED TO COOKING FUMES EXPOUSURE AMONG KITCHEN WORKERS Semra NAVRUZ VARLI, Saniye BILICI
PP-89	EVALUATION OF EXTREME METEOROLOGICAL EVENTS CONSIDERING FOOD SECURITY BLACK SEA CASE: 27-28 JULY 2017 Tahsin TONKAZ, Sumeyye SAHIN, Sevda OCAK
PP-90	INVESTIGATION OF THE ANTIBACTERIAL EFFECT OF THE PLANT SIDERITIS PHLOMOIDES BOSS. & BAL. AN ENDEMIC SPECIES IN TURKEY Rahime DUNDAR, Cuma ZEHIROGLU, Beyza O. SARIKAYA
PP-91	EFFECTS OF MONOSODIUM GLUTAMATE LONG TERM TREATMENT ON BEHAVIOUR AND PAIN THRESHOLD IN RATS Ozlem OZYUREK, Kamile Yazgan OZDIRAZ, Asuman GOLGELI
PP-92	THE IMPORTANCE OF ANTIOXIDANTS AND PLACE IN TODAY'S SCIENTIFIC STUDIES Cuma ZEHIROGLU, Beyza O. SARIKAYA
16.⁰⁰-18.⁰⁰	Chairs: Prof. Dr. Sukru DURSUN, Assoc. Prof. Dr. Besim OZAYKAN
PP-93	ANALYSING ENVIRONMENTAL NOISE LEVELS IN URBAN PARKS Neslihan DOYGUN, Aynur AKSOY
PP-94	EFFECTS OF ENGINEERED-NANOPARTICLES ON PERMEABILITY AND CYTOTOXICITY OF BRONCHIAL EPITHELIAL CELL CULTURES FROM SUBJECTS WITH AND WITHOUT CHRONIC OBSTRUCTIVE PULMONARY DISEASE Sedat ILHAN, Demet TASDEMIR, Hasan BAYRAM
PP-95	EXAMINATION OF INTERACTIONS RELATED TO INDOOR AIR POLLUTANTS Polat DARCIN, Ayse BALANLI
PP-96	PARTICLE MATTER POLLUTION MEASUREMENT MODELLING IN PVC PRODUCTION FACTORY Sukru DURSUN, Emine AK
PP-97	INDOOR AIR POLLUTION AND ITS EFFECTS ON HEALTH Emine ONCU, Ezgi ONEN
PP-98	WASTE CONCEPT IN THE HEALTH SECTOR AND MANAGEMENT OF MEDICAL WASTES Sinem SOMUNOGLU IKINCI, Ozgur ZEYDAN
PP-99	INVESTIGATION OF INFORMATIVE SIGNBOARDS RELATED TO PHYSICAL ACTIVITY FOR HEALTH IN THE CITY PARK OF MANISA Hayriye KUL KARAALI, Duygu ILGIN
PP-100	TOXIC WASTES CREATED BY FLOOD DISASTER AND THE EFFECTS ON HUMAN HEALTH Meliksah TURAN, Afsin Ahmet KAYA, Vildan ORAL
PP-101	EVALUATION OF EMERGENCY AND DISASTER PREPAREDNESS IN SMALL BUSINESS; SAMPLE OF GUMUSHANE PROVINCE Afsin Ahmet KAYA, Vildan ORAL, Meliksah TURAN
PP-102	EVALUATION OF PHYSICAL CONDITION OF WORKING ENVIRONMENT AND OCCUPATIONAL ACCIDENT ON KITCHEN WORKERS Suleyman KOSE, Saniye BILICI
PP-103	HOUSING CONDITIONS AND HEALTH RELATEDNESS IN CHILDHOOD Ezgi ONEN, Sumbule KOKSOY VAYISOGLU
PP-104	THE IMPACTS OF CLIMATE CHANGE ON THE FISHERIES/AQUACULTURE Fatih KORKMAZ, Harun ARSLAN
16.⁰⁰-18.⁰⁰	Chair: Assit. Prof. Dr. Cagatay Han Bekir ERSU
PP-105	ENVIRONMENTAL EFFECTS OF LIME PRODUCING PLANTS Ozen KILIC, E. KAHRAMAN, Ahmet Mahmut KILIC
PP-106	ISOLATION OF LISTERIA MONOCYTOGENES FROM BLACK MUSSELS (MYTILUS GALLOPROVINCIALIS L. 1819) IN TURKEY Meric Lutfi AVSEVER

INTERNATIONAL CONGRESS OF HEALTH AND ENVIRONMENT

October 23-25, 2017

Adana-TURKEY

PP-107	TREND ANALYSIS OF WATER QUALITY PARAMETERS AND COMPARE THEM WITH THE WATER LEVEL FLUCTUATIONS OF THE LAKE URMIA Mohammad Taghi SATTARI, Salar JAREHAN
PP-108	WATER POLLUTION AND POLLUTED WATER RELATED ILLNESSES Ozgur ZEYDAN, Sinem SOMUNOGLU IKINCI
PP-109	CURRENT LEVEL AND MANAGEMENT OF THE WATERBORNE DISEASES IN A PROVINCE Ahmet CELEBI, Metin BADAR, Nejla BALDAZ
PP-110	WATER PRODUCTION FROM MOISTURE IN THE AIR IN ADANA PROVINCE Kasım Eren TUNA, Onur SOYSAL, Tugce KAYA, Dilek BOSTAN BUDAK
PP-111	INVESTIGATION OF HEAVY METAL CONTENT IN SOILS FROM DIFFERENT AGRICULTURAL AREAS OF GRAIN PRODUCED IN KARAMAN PROVINCE Fevzi KILICEL, H. Sibel KARAPINAR, Onur GULADA
PP-112	THE EFFECT OF DIFFERENT CONCENTRATIONS OF POLYAMINE SPERMIDINE ON SOME PHYSIOLOGICAL AND BIOCHEMICAL PARAMETERS IN PEPPER PLANTS SUBJECTED TO PHYTOPHTHORA CAPSICI STRESS Esra KOC
PP-113	TOTAL HEAVY METAL POLLUTION IN MAIZE FIELDS OF ADANA-SEYHAN REGION Ayfer ALKAN TORUN, Ebru DUYMUS, Oguzhan AYDIN, Fatma DENKER, Musa DEMIR, M.Bulent TORUN
PP-114	PRODUCTION OF CARBON SUPPORTED CATALYST FROM RENEWABLE BIOMASS RESOURCE Elif YAMAN, Nurgul OZBAY, Adife Seyda YARGIC, Rahmiye Zerrin Yarbay SAHIN
PP-115	IMPROVING THE QUALITY OF BIOMASS FOR RENEWABLE SOLID FUEL Nurgul OZBAY, Elif YAMAN, Adife Seyda YARGIC, Rahmiye Zerrin Yarbay SAHIN
PP-116	AN EVALUATION IN THE TERMS OF ETHICS REGARDING CIVIL DISOBEDIENCE MOVEMENTS AGAINST ANTI-ENVIRONMENTAL POLICIES Gulay HALIDI, Ozgur KIRAN, Selim KADIOGLU
PP-117	POSITIVE AND NEGATIVE IMPACTS OF AGRICULTURE ON ENVIRONMENT IN DEVELOPING COUNTRIES Aybuke KAYA, Erdal DAGISTAN, Dilek BOSTAN BUDAK
PP-118	EVALUATION OF ORGANIC FARMING AND CONVENTIONAL AGRICULTURE IN TERMS OF ENVIRONMENT Aybuke KAYA, Dilek BOSTAN BUDAK
PP-119	CHROMIUM-INDUCED OXIDATIVE STRESS IN ROOT CELLS OF <i>ALLIUM CEPA L.</i> (<i>AMARYLLIDACEAE</i>) Kursad YAPAR, Kultigin CAVUSOGLU, Emine YALCIN
PP-120	TOXIC EFFECTS OF NICKEL ON PHYSIOLOGICAL PARAMETERS OF <i>ALLIUM CEPA L.</i> (<i>AMARYLLIDACEAE</i>) Kursad YAPAR, Emine YALCIN, Kultigin CAVUSOGLU
PP-121	SOIL CO ₂ FLUX RESPONSE TO DIFFERENT DOSAGE OF PHOSPHORUS FERTILIZER Alexandra BYKOVA, Ibrahim MALIK, Ibrahim ORTAS
PP-122	EFFECTS OF VITAMIN C ON PATHOLOGY AND CASPASE-3 ACTIVITY OF KIDNEYS WITH SUBACUTE ENDOSULFAN TOXICITY Ozlem OZMEN, Firdevs MOR
PP-123	OCHRATOXIN A AND ITS EFFECTS Omur SENGUL, Fatma KOCASARI SAHINDOKUYUCU, Ozlem OZMEN, Firdevs MOR

INTERNATIONAL CONGRESS OF HEALTH AND ENVIRONMENT

October 23-25, 2017

Adana-TURKEY

E-POSTER PRESENTATIONS

Number	TITLE/AUTHORS
EP-1	IMPORTANT PESTS AND THEIR BIOLOGICAL CONTROL IN GREENHOUSE VEGETABLE GROWING IN TURKEY Naime Zulal ELEKCIOGLU
EP-2	EVALUATION OF THE EFFECT OF INDUSTRIAL AND ENVIRONMENTAL FACTORS ON HEEL SPUR IN ANATOLIAN CIVILIZATIONS Ahmet Kursad ACIKGOZ, Ahmet Cem ERKMAN, Pınar GOKER, Memduha Gulhal BOZKIR
EP-3	ANALYSIS OF ARTICULAR FACET VARIATIONS AND ENVIRONMENTAL RELATIONS IN ANCIENT ANATOLIAN CIVILIZATIONS Ahmet Kursad ACIKGOZ, Ahmet Cem ERKMAN, Pınar GOKER, Memduha Gulhal BOZKIR
EP-4	INVESTIGATION OF TOXIC, GENOTOXIC AND CYTOTOXIC EFFECTS ON ALLIUM CEPA AND CAENORHABDITIS ELEGANS TEST SYSTEMS OF VARIOUS NANOPARTICLES Sifa TURKOGLU, Gamze ATACI
EP-5	EFFECT OF 1800 MHZ RADIOFREQUENCY RADIATION ON P21 AND CASPASE-3 GENES EXPRESSION LEVEL IN RAT LIVER TISSUE Sezin Sevinc OZDEMIR, Nurcan ARAS, Aysegul CETINKAYA, Ugurgul YAS, Badel ARSLAN
EP-6	EFFECT OF DIFFERENT FACTORS ON PARTICLE MATTER MODELLING AROUND POLLUTION SOURCE AREA Sukru DURSUN, Ibrahim KARACOBAN
EP-7	KINETIC STUDY OF RHODAMINE B REMOVAL FROM WASTE WATER USING VAN PUMICE Ali Riza KUL, Hasan ELIK, Veysel BENEK
EP-8	THERMODYNAMIC AND ISOTHERM STUDIES OF RHODAMINE B REMOVAL FROM WASTE WATER USING VAN PUMICE Ali Riza KUL, Hasan ELIK, Veysel BENEK
EP-9	INSTITUTIONAL RESPONSIBILITIES FOR MONITORING OF ENVIRONMENTAL POLLUTION Nermin Merve YALCINKAYA, Gulay TOKGOZ, Nuriye SAY
EP-10	EVALUATION of STONE QUARRIES in VAN PROVINCE within the SCOPE of LEGISLATION Tuba BAYRAM, Emrah BOZKAYA
EP-11	INVESTIGATION OF THE NABR - BA(H ₂ PO ₂) ₂ - H ₂ O WATER-SALT TERNARY SYSTEM AT +50°C Hasan ERGE, Vedat TAVSAN, Ali Riza KUL, Fırat KAHRAMANER
EP-12	KINETICS STUDIES OF ZINC ADSORPTION ON VAN PUMICE Ali Riza KUL, Veysel BENEK, İhsan ALACABEY, Nilgun ONURSAL
EP-13	THERMODYNAMIC AND ISHOTERM STUDIES OF ZINC ADSORPTION ON VAN PUMICE Ali Riza KUL, Veysel BENEK, Hasan ELIK, Nilgun ONURSAL
EP-14	DETERMINATION OF THE LEAD AND CHROME AMOUNT IN WATER SAMPLES FROM THE RURAL AREAS OF VAN PROVINCE Nuran BAZANCIR GORENTAS, Sema KATANOGLU, Hasan ERGE
EP-15	DETERMINATION OF THE SALINITY OF THE SOIL SAMPLES TAKEN FROM THE RURALS OF VAN PROVINCE Nuran BAZANCIR GORENTAS
EP-16	REMOVAL OF CATIONIC DYE IN AQUATIC MEDIUM BY USING A NEW COMPOSITE MATERIAL Zeynep Mine HASDEMİR, Selcuk SIMSEK
EP-17	INVESTIGATION OF ATMOSPHERIC DEPOSITION OF SOME NATURAL RADIONUCLIDES (210Po, 210Pb, AND 7Be) IN AEGEAN REGION Isık FILIZOK, Aysun UGUR GORGUN

INTERNATIONAL CONGRESS OF HEALTH AND ENVIRONMENT

October 23-25, 2017

Adana-TURKEY

EP-18	HEAVY METALS ACCUMULATION BY PLANTS AND EFFECT ON NUTRITION OF FOOD Mirela ALUSHLLARI, Sukru DURSUN
EP-19	POSSIBLE EFFECTS ON HUMAN HEALTH OF CYANOTOXINS IN SEAFOOD Soner CETINKAYA
EP-20	COMPOSITION AND CLASSIFICATION OF THIRTY SELECTED METALS IN RHEUM HERBS GROWN AT IRAQ KURDISH REGION AND SIIRT, TURKEY BY CHEMOMETRIC ANALYSIS Ibrahim Tegin, Bakhtiyar Mahmood Fattah, Gurbet Canpolat
EP-21	HISTOPATHOLOGICAL EFFECTS OF FONOFOS ON GILLS OF ZEBRAFISH (Danio rerio) Sezgi ARMAN, Sema Isisag UCUNCU
EP-22	ACROLEIN-INDUCED HISTOPATHOLOGICAL ALTERATIONS IN THE LIVER OF GOLDFISH, Carassius auratus Sezgi ARMAN, Sema Isisag UCUNCU
EP-23	CO-EXPOSURE TO POLLEN ALLERGEN AND OZONE MEASUREMENTS OF BRONCHIAL RESPONSE DURING EXPOSURE IN A CLIMATE CHAMBER Ørby PV, Bønløkke JH, Bibby BM, Ravn P, Hertel O, Sigsgaard T, Ellerman T, Schlünssen V.
EP-24	POTENTIALLY HARMFUL PHYTOPLANKTON SPECIES IN THE EASTERN MEDITERRANEAN, THEIR ENVIRONMENTAL AND HEALTH EFFECTS Sevim POLAT, Tuba KURT
EP-25	ARE UV FILTERS (SUNSCREENS) THREATENING OR PROTECTING US? Evsen YAVUZ, Fatma CEVIK
EP-26	INVESTIGATIONS TOXIC EFFECTS OF MESOTRIONE ON Galleria mellonella L Mustafa COSKUN, Turan TANKUT
EP-27	AN ALTERNATIVE KIND: PANGASIUS HYPOPHthalmus Ebru YILMAZ, Cengiz KOC
EP-28	DISTRIBUTION AND BIOLOGICAL PROPERTIES OF PRUSSIAN CARP WHICH IS THE IMPORTANT INVASIVE SPECIES Goktug GUL, Meryem Cagri GUL, Nilsun DEMIR
EP-29	FOOD COMPOSITION OF LEVANTEN WATER FROG, PELOPHYLAX BEDRIAGAE IN MEDITERRANEAN TURKEY Kerim CICEK, Yusuf BAYRAKCI, Dincer AYAZ
EP-30	CHIA (SALVIA HISPANICA): FUNCTIONAL FOOD AND HEALTH RELATION Mehmet KILINC, Oktay TOMAR, Abdullah CAGLAR
EP-31	EFFECTS OF ALKANNA TINCTORIA ON HUMAN HEALTH Mehmet KILINC, Oktay TOMAR, Gokhan AKARCA
EP-32	BIOACTIVE COMPOUNDS OF SEAWEEDS AND THEIR POTENTIAL HEALTH BENEFITS Sevim POLAT, Ibrahim GUR, Tuba KURT, Abdurahman POLAT
EP-33	FOOD SAFETY, NUTRITION AND HEALTH Sema CELIK
EP-34	THE INVESTIGATION OF ANTIFUNGAL EFFECTS OF FLOUR, OIL AND EXTRACT OF GRAPE SEEDS AGAINST ON VARIOUS YEASTS Emine Aksan ALDANMAZ, Nursel ATES
EP-35	THE DETERMINATION OF ENRICHMENT FACTORS OF SOME HEAVY METALS IN THE SEDIMENTS OF NORTHWEST REGION OF KEBAN DAM LAKE (ELAZIĞ) Ozgur CANPOLAT, Kursad Kadir ERIS, Ozlem OZTEKİN OKAN, Dicle BAL AKKOCA, Metin CALTA
EP-36	THE DETERMINING OF MICROBIOLOGICAL CONTAMINATION LEVEL OF VAN LAKE AND ERÇEK LAKE in THE BOUNDARIES OF VAN Elif AYDIN, Mehmet PARLAK, Huseyin GUDUCUOGLU
EP-37	ADSORPTION COMPETENCE STUDY OF SOYBEAN WASTES REGARDING REMOVAL OF CR (VI) FROM WASTE WATERS Oanamari Daniela ORBULET, Cristina MODROGANI, Madelene DANCILA, Constantin BOBIRICA, Cristina ORBECI, Cristina COSTACHE
EP-38	COD REDUCTION OF WASTEWATER CONTAINING AMPICILLIN USING CRT GLASS WASTE AS PHOTOCATALYTIC SUBSTRATE FOR TiO ₂ Mihai EFTIMIE, Madelene DĂNCILĂ, Cristina MODROGAN, Cristina ORBECI, Alina MELINESCU
EP-39	REMOVAL OF 2,4-DCP FROM WASTEWATER Cristina ORBECI, Daniela SIMINA Stefan, Rodica STĂNESCU

INTERNATIONAL CONGRESS OF HEALTH AND ENVIRONMENT

October 23-25, 2017

Adana-TURKEY

EP-40	AFFORESTATION/REFFORESTATION, A SIMPLY AND CHEAP WAY TO REDUCE THE EFFECT OF CLIMATE CHANGE Daniela Simina STEFAN, Cristina ORBECL, Mircea STEFAN, Rodica STĂNESCU
EP-41	SYNTHESIS AND CHARACTERIZATION OF CELLULOSE ACETATE-HYDROXYAPATITE MICRO AND NANO COMPOSITES MEMBRANES FOR WATER PURIFICATION AND BIOMEDICAL APPLICATIONS A.M. PANDELE, F.E. COMANICI, C. A. CARP, F. MICULESCU, S.I. VOICU
EP-42	INOCULATED MOUSE MAMMARY CARCINOMAS RELEASE EXTRACELLULAR VESICLES Yuko Ito, Nabil Eid, Masa-Aki Shibata, Yoichi Kondo
EP-43	ULTRASTRUCTURAL FEATURES OF ENHANCED MITOPHAGY IN LIVER AND TESTES OF ETHANOL-TREATED RATS Nabil EID, Yuko ITO, Akio HORIBE, Yoichi KONDO
EP-44	LOW-COST SENSORS FOR AIR QUALITY ASSESMENT MB POULSEN, S BUTTRICH, CK JENSEN, O HERTEL
EP-45	THE EFFECT OF DIAZINON, AN ORGANOPHOSPHOROUS PESTICIDE, ON PHOSPHOLIPID FRACTION IN THE LIVER OF OREOCHROMIS NILOTICUS Murat YOLCU, Mehmet BASHAN, Veysi KIZMA, Ismail YENER, Elif Ipek SATAR
EP-46	ANTIMICROBIAL AND ANTIOXIDANT ACTIVITY OF NEWLY SYNTHESIZED Dichloro[N,N-Bis(diphenylphosphino)-3,5-dimethoxyaniline]Pd(II) COMPLEX Ahmet Ismail OZKAN, Nesrin HASIML, Nermin BIRICIK, Veysel TOLAN
EP-47	THE EFFECT OF OCCUPATIONAL AND PERSONAL RISK FACTORS ON TARSAL TUNNEL SYNDROME Ahmet Hilmi YUCEL, Rumeysa Gamze TASKIN
EP-48	POLYPLOIDY INFLUENCES PLANT-ENVIRONMENT INTERACTIONS IN QUAKING ASPEN Greer BT, Still C, Cullinan GL, Brooks JR, Meinzer FC
EP-49	SCEPTICISM AND DISINTEREST IN CLIMATE CHANGE: A PERSPECTIVE FROM TURKISH MIDDLE SCHOOL STUDENTS AT A RURAL AREA Sema SEKER, Elvan SAHIN, Esme HACIEMINOGLU
EP-50	AIRBORNE ALTERNARIA SPP. IN VIBORG AND COPENHAGEN 2012-2015. DENMARK Olsen Y, Gosewinkel U, Skjøth C, Hertel O, Rasmussen K, Sigsgaard T.

INTERNATIONAL CONGRESS OF HEALTH AND ENVIRONMENT

October 23-25, 2017

Adana-TURKEY

INVITED SPEAKERS

INTERNATIONAL CONGRESS OF HEALTH AND ENVIRONMENT

October 23-25, 2017

Adana-TURKEY

IS-1 GLOBAL RISK IN FOOD PRODUCTION

Prof. Dr. Mehmet PALA

Halic University, Istanbul

Food is crucial need for human life. Access to sufficient amount of safe and nutritious foods is key to sustaining life and promoting good health. Overweight and obesity are linked to over consumption of food. Globally, there are more people who are obese than underweight. If global population reaches over 9 billion by 2050, the World food production will need to double. This a challenging task for all of us.

To achieve this task, there are a lot of risks on the way. Food risks can result from a broad range of reasons. World population is increasing, migration to cities is accelerating, climate is changing. These are all affecting the agriculture and food production, and putting the global food system under ever-increasing pressure. The food system encompassing the agricultural production, processing, storing, transportation, sales and consumption. There are many risks associated with the food system, resulting from microbiological, chemical and physical contaminations. In most cases, these are well regulated.

Over the last 50 years, human activities – particularly the burning of fossil fuels - have released sufficient CO₂ and other greenhouse gases to trap additional heat in the lower atmosphere and affect the global climate. Climate change affects the agricultural production, the ecosystem and the food availability in the world.

Consumer confidence in the safety of food is vital to the food processing industry. The safety of foods involves eliminating and/or preventing the different sources of contaminants. In this respect, food industry relies on modern quality management systems to ensure the quality and safety of foods.

Agricultural and Food technology research efforts are essential to identify ways to reduce the environmental impacts on the agricultural production, processing and distribution of food, and to enhance the ability of the food system to deliver sufficient and safe foods.

INTERNATIONAL CONGRESS OF HEALTH AND ENVIRONMENT

October 23-25, 2017

Adana-TURKEY

IS-2 NUCLEAR AND RADIOACTIVE INJURIES IN TERMS OF FORENSIC SCIENCES

Prof. Dr. Halis DOKGOZ

Mersin University Medical Faculty

Department of Forensic Medicine, Mersin, Turkey

Developing technology and rapid population growth, energy needs have been increasing in the worldwide. In order to supply rising energy demands, the countries have been tending to nuclear power plants which have high productivity. As all kinds of energy sources, there are negative effects to public health in the stages of production and consumption also for nuclear energy.

Terrorist activities may carry out in various dimensions such as national, ethnic, political, religious, economic, ecologic, ideologic, or electronic. However, Chemical, Biological, Radiological, and Nuclear (CBRN) terrorism is especially much more dangerous as it can also cause mass destructions.

Nuclear radioactivity is used for diagnostic and treatment purposes, but it can also be used in criminal activities. Further evaluation of nuclear radioactivity use in criminal offenses by forensic sciences are necessary.

The treatment after nuclear disasters is very important. However, the only reliable way to prevent nuclear disasters is to stay away from radiation sources, using natural energy sources.

Keywords: Nuclear Injuries, Radioactive Injuries, Forensic Science.

INTERNATIONAL CONGRESS OF HEALTH AND ENVIRONMENT

October 23-25, 2017

Adana-TURKEY

IS-3 FORENSIC SCIENCES AND ENVIRONMENTAL HEALTH

Prof. Dr. Hakan KAR^{1,2}

¹Mersin University Medical Faculty, Department of Forensic Medicine

²Mersin University, College of Health Care Services

Environmental Health Sciences is a multidisciplinary field and it provides application of different scientific methods to examine the effects of chemical compounds on environment and human health. Environmental forensics is the important one of the Environmental Health Sciences and defined as “the systematic and scientific evaluation of physical, chemical, and historical information for the purpose of developing defensible scientific and legal conclusions regarding the source or age of a contaminant release into the environment”.

Forensic Medicine and Forensic Toxicology are two combined branches that helps to solve Environmental Forensics cases. This two very close scientific field work together to determine and evaluate possible chemical agents that harms health's of human, animal and environment. Forensic Medicine Experts makes autopsies and collects samples, than Forensic Toxicologists analyze samples to detect potential risky or harmful chemical compounds.

Keywords: Environmental health, environmental forensics, forensic sciences, forensic medicine, forensic toxicology

INTERNATIONAL CONGRESS OF HEALTH AND ENVIRONMENT

October 23-25, 2017

Adana-TURKEY

IS-4 FOTOGRAMMETRY, UNMENNED AERIAL VEHICLES, LASER SCANNING

Prof. Dr. Murat YAKAR

Mersin University Engineering Faculty Geomatic Department

Yenisehir-Mersin -TURKEY

Photogrammetry is the art, science, and technology of obtaining information about physical objects and the environment by photographic and electromagnetic images. Photogrammetry is deal with measureing of the position, shape, size, and texture of objects from measurements made on photographs. In its simplest form, a pair of overlapping photographs is used to create a three-dimensional model, with the use of appropriate instrumentation can yield quantifiable dimensions of the object. The primary purpose of a photogrammetric measurement is the three dimensional measurement of an object in digital form (coordinates and derived geometric elements) or graphical form (images, drawings, maps).

The other way to measuremet of the object as three dimensional measurement is terrestrail laser scanning technics. The terrestrial laser scanner is widely used for direct generation of a three-dimensional (3D) image of an object in the fields of surveying.. As a new additional technology, laser scanners allow a fast and complete capture of complex. They provide users with a three-dimensional sampled representation—a point cloud—of an object or surface and are used in a diverse range of applications including environmental measurement, metrology, asbuilt surveys, reverse engineering, airborne topographic surveying, cultural heritage recording and volume estimation on mine sites. Hardware and software have been greatly improved for their basic functions as a new technique for 3D surveying, such as scanning speed, range and resolution. However, compared to other surveying techniques, laser scanning has its own special features, and therefore cannot only be taken as a surveying tool, but also as a new 3D technique for documentation, design and visualisation

Unmanned aerial vehicles (UAV) are very important and a valuable source of data for inspection, surveillance, mapping, and 3D modeling issues in last days. Rotary or fixed-wing UAVs, capable of performing the photogrammetric data acquisition with amateur or SLR digital cameras, can fly in manual, semiautomated, and autonomous modes. Following a typical photogrammetric workflow, 3D results like digital surface or terrain models, contours, textured 3D models, vector information, etc. can be produced, even on large areas.

In this presentation, Photogrammetry, laser scanning technics and Unmanned aerial vehicle for 3d measurement will be introduded for environmental measurement

INTERNATIONAL CONGRESS OF HEALTH AND ENVIRONMENT

October 23-25, 2017

Adana-TURKEY

IS-5 GLOBAL WARMING, CLIMATE CHANGE and ENVIRONMENTAL HEALTH

Assoc. Prof. Dr. S. SIDDIK CINDORUK

Uludag University, Faculty of Engineering, Environmental Engineering Department, Görükle, Bursa/ Turkey

Increasing population, industrialization, extent discharges of emissions from stacks, vehicle exhausts, landfills and mining activities lead to accumulation of greenhouse gases (GHGs) in the atmosphere. Natural processes such as volcanic eruptions, rice paddies, forest fires, cattle breeding and vegetation also cause increases. GHGs are responsible for the absorption of low-energy, long-wavelength radiation which is reflected from the earth surfaces. Therefore; rise in the level of absorbed radiation is an inevitable result of increase in GHGs concentrations. This means that atmospheric temperatures continue to rise with discharges of GHGs. It has been accepted by IPCC (Intergovernmental Panel on Climate Change) reports that average atmospheric temperature increased 0.6-0.9 °C over the past century. The level of CO₂ (carbon dioxide), is the main compound of GHGs, and temperature was determined well correlated. The increase in CO₂ level was reported as 40% from 1800 to 2017 (280 ppm to 405.7 ppm). Excess warming leads to change in evaporation-precipitation cycle, wind characteristics and energy balance. All these variations cause to warmer-colder days, extended rain-hail events, retreating of glacier, aridity of soils, negative influences on water organisms, earlier phenologic events of vegetation and unexpected and weird behaviors on animals etc. Flood, Tsunami can be seen in some parts of the world while aridity, starvation and diseases can appear in somewhere else. Pollutants and hazardous wastes discharged to environment by different sources may be transported by unexpected precipitation and wind events to remote and relatively clean environment. Therefore, some diseases also can be transmitted by environmental vectors which are an important subject of epidemiology.

Keywords: Greenhouse gases, temperature increase, climate change effects, health.

INTERNATIONAL CONGRESS OF HEALTH AND ENVIRONMENT

October 23-25, 2017

Adana-TURKEY

IS-6 NOISE AND HEALTHY HEARING

Assoc. Prof. Dr. Didem TURKYILMAZ

Department of Audiology, Institute of Health Science, Hacettepe University, Ankara, Turkey.

Noise is one of the most common harmful entity in the environment. Noise could be described as harmful sound to the human. It has been shown that sounds over 75 dB(A) cause damage particularly in hearing system and also rest of the human body. While long-term exposures to noise over 75/85 dB(A) is associated with gradual increase in hearing thresholds. Noise induced hearing loss is a permanent hearing impairment resulting from prolonged exposure to high levels of noise (noise-induced hearing loss, NIHL). Noise can also cause a reversible hearing loss, called a temporary threshold shift. This typically occurs in individuals who are exposed to gunfire or firecrackers, and hear ringing in their ears after the event. NIHL is almost entirely preventable. Although hearing normally declines with age, the average, healthy, non-noise-exposed person can have essentially normal hearing at least up to age 60. Individuals vary in their susceptibility to hearing loss. While research has shown some trends, there currently is no reliable way to identify which particular individuals may be most susceptible to NIHL. To protect themselves when exposed to hazardous noise, everyone should take some precautions.

INTERNATIONAL CONGRESS OF HEALTH AND ENVIRONMENT

October 23-25, 2017

Adana-TURKEY

IS-7 HAZARDOUS WASTE MANAGEMENT IN TURKEY

Prof. Dr. Bulent TOPKAYA

Akdeniz University , Department of Environmental Engineering, Antalya

The United Nations Environment Program (UNEP) defines waste as "substances that the owner does not want, does not need, does not use, requires purification and removal". These substances can be further classified according to various criteria, and one of them is classification according to safety level: Waste with properties that make it dangerous or capable of having a harmful effect on human health or the environment is called "hazardous wastes". Hazardous waste is generated from many sources, ranging from industrial manufacturing process wastes to batteries and may come in many forms, including liquids, solids gases, and sludge.

According to statistical data from 2014, total amount of municipal waste produced is 30 000 000 t/year. In the same statistics it is reported that 1 450 000 t of hazardous waste is reported and collected in 2014. On the other hand, according to statistical data (2004) of Turkstat, only 5% of approximately 2 million tons of hazardous waste produced annually is incinerated or landfilled properly by the only hazardous waste disposal facility of Turkey, İzaydaş. Considering that 40% of the hazardous waste is recovered, it is obvious that remaining part of waste is dumped to the landfills together with household waste or directly left to nature in a way that causes big threats to environment and human health. These discrepancies highlight the major difficulty of hazardous waste management in Turkey which is also resulting from missing/uncompleted statistical data. According to National Waste Management Strategy report (2007-2023) prepared in frame work of EU association negotiations, 6,5 billion € investments are foreseen for combating with climate change which also includes the waste sector, in order to comply with the regulations in the EU by the year 2023.

In this study the stand of hazardous waste management in Turkey and projections in the future will be discussed more in detail.

IS-8 STATISTICAL AND ENVIRONMENTAL EVALUATIONS ON SOME POTENTIAL AIR POLLUTION IN THE CITY OF TIRANA, ALBANIA

Flora MERKO¹, Hysen MANKOLLI^{2, 3}, Sukru DURSUN⁴

¹Aleksander Moisiu University, Department of Economics, Durres, Albania; ²The ESSIC Business Office, ID: 13200 consulting project, Maryland University, USA; ³Environment Health Association, Tirana, Albania; ⁴Selcuk University, Engineering Faculty, Konya, Turkey;

Introduction

The main pollutants that affect the air quality are: NO₂, O₃, SO₂, CO, PM₁₀, PM_{2.5} and benzene emitted by fossil fuels for energy and transport. Ozone (O₃) is a secondary pollutant which is formed by the oxidation of primary pollutants in the presence of solar radiation, which affects the global climate change. Sulfur and nitrogen oxides in the interaction with air humidity return to acids and are deposited on earth in the form of acid rain which is detrimental to agriculture and the environment in general. Air pollution from chemicals, dust particles or biological materials causes disturbances or injuries to humans and other organisms by adversely affecting the natural environment.

In Albania the situation of air quality is one of the major issues that disturb local and national authorities for the impact on the health of the population, agriculture and the environment in general. Human lifestyle is directly dependent on the ecosystem in which he lives, so it is necessary to protect and maintain the environment, as well as to ensure a quality durable life for present and future generations.

Currently, the main sources of air pollution are oil extraction, mobile sources, heating of homes, and the production of cement. The main source of urban air pollution is transport. The number of vehicles continues to grow from year to year and emissions of gases from vehicles (including PM₁₀) contributes to a large extent to air pollution causing respiratory problems, especially in the young and the elderly.

Material and Methods

The data on the main pollutants are over a period of several years and are available from the National Environmental Agency, Ministry of Environment and Albania Institute of Statistics (INSTAT). The methods used are statistical and comparative.

In Albania, the systematic measurement of emissions of the basic polluting substances includes continuous 24-hour measuring of sulfur dioxide (SO₂), total nitrogen oxides (NO_x), tropospheric ozone (O₃), the overall content of suspended particles (PM₁₀), and lead (Pb).

Over the past few years, the EU legal context and the national legislation pursuing the EU directive on urban air, help to determine the necessary actions for improving the air quality on the basis of identification of new criteria

INTERNATIONAL CONGRESS OF HEALTH AND ENVIRONMENT

October 23-25, 2017

Adana-TURKEY

for control and air quality management at the local and national level. The EU policy framework is mainly focused on two main points: one is the identification of the limit value of air pollutants oriented to the protection of human health and ecosystems, and on the other hand the development of a coordinated controls plan and air quality management. These directives, as well as Albanian legislation, present the problem of air pollution as a dynamic phenomenon that is necessary and very important to be managed.

Results

Tirana is the capital of Albania. After the end of the communist system in 1991, a great number of people moved from rural areas to Tirana looking for better economic opportunities, bringing a large growth of population. This fast increasing of population brings also much environmental problems such as high level of air pollution, noise pollution, uncontrolled waste generation, etc. Before '90 years, in Tirana, as well as in other Albanian cities, air pollution was caused by industry. Due to the very low number of the vehicles in this period pollutants emission by road traffic was insignificant. At present, the situation is the opposite as higher pollutants emission takes place due to the immense increase of vehicular transport, while industrial emission is low because of the limited industrial activities.

When Albania's communist dictatorship collapsed in the late 1980's there were only 2,000 cars in the country. In the 27 years, the city, together with the rest of the country, has paid the price of freedom. Choked with 415,000 cars, buses, etc. which burn fuel banned in the EU, Tirana is now seen as one of the most polluted capital in Europe.

Traffic, constructions and old methods of street cleaning influence in the high level of pollution. The main source of urban air pollution is transport. The number of vehicles continues to grow from year to year and emissions of gases from vehicles contribute to a large extent to air pollution.

As Tirana is the capital of Albania, and its population is about 862,000 residents (almost 30% of total population), we analyzed the air pollutions especially for this city, comparing with the EU rate. Monitoring of these indicators is made in four different areas of Tirana, with mobile stations, for the main indicators, such are: PM₁₀, NO₂, SO₂, O₃, CO and benzene.

Pollution from PM₁₀

Dusts are one of the air pollutants that really cause serious problems in human health. Pollution from PM₁₀, according to WHO recommendations, is the greatest health risk today for urban air on a global scale, as particle sizes below 10 microns and 2.5 microns can penetrate the lower part of the lungs. This pollution is mainly due to vehicle emissions and is characteristic of old diesel engine cars. Also construction and infrastructure in construction are contributing to the growth of PM₁₀.

Related to PM₁₀, we emphasize that: in all four stations the rate of PM₁₀ is higher than EU rated, which varies from 15% to 119% more than EU rates. Station 1 is 46.01 µg/m³ (15% higher); station 2 is 55.25 µg/m³ (38% higher); station 3 is 71.85 µg/m³ (79% higher) and station 4 is 87.78 µg/m³ (119% higher), and the EU rate is 40.00 µg/m³.

INTERNATIONAL CONGRESS OF HEALTH AND ENVIRONMENT

October 23-25, 2017

Adana-TURKEY

NO₂ air pollutants

In assessing the quality of urban air, particular importance is given to the content of gases, the high levels of which have important consequences for health and the environment. The main source of NO₂ pollution is related to the high number of old cars in Albania, lack of catalysts in cars and low fuel quality. Based on the monitoring data, it appears from the chart below that urban air is not generally clear from NO₂, if on the two of these stations the actual rate exceed the EU rate, respectively Station 3 the value is 73.13 µg/m³(83% higher) and station 4 is 79.64 µg/m³(99% higher), and in two other stations the values are under the EU rates, respectively station 1 is 30.18 µg/m³ (32% lower) and station 2 is 33.07 µg/m³(21% lower) and the EU rate is 40.00 µg/m³.

Regarding SO₂, CO and O₃, the average monitored values are under the EU rates in all four stations. For benzene in only one station, where the value exceed EU rate, in three others the values are under the EU rates.

Externalities of Air Pollution are seen grouped in three categories of costs that cause:

Economic costs that include a wide range of externalities like damage to property, structures and infrastructure and loss of productivity of people and crops. They directly impacts on the productivity of the labor force in terms of total man-hours with time lost at home, health facilities or attending for the care of others. Crops and timber products are also directly affected by air pollutants, and losses may be expected in quantities produced per unit of surface.

Social costs that include the impacts of air pollutants on human beings, mostly but not limited to the cardiovascular and respiratory systems, medical costs associated with air pollution thus have a fairly wide range of consequences, loss of life expectancy could also be a general measure.

Environmental costs that include general damage done to the ecosystem through the atmosphere, except for what may be considered economically useful to human activities (like crops). Environmental costs are the most difficult, if possible, to assess in a comprehensive manner. It could refer to biological diversity and sustainability, which air pollutants have a high proficiency to affect.

Thus, the two of the indirect problems that arise from air pollution are: a) disease and death, and b) damaging plants and animals. Air pollution is a significant risk factor for a number of pollution-related diseases and health conditions including respiratory infections, heart disease, and stroke and lung cancer. The health effects caused by air pollution may include difficulty in breathing, wheezing, coughing, asthma and worsening of existing respiratory and cardiac conditions. The World Health Organization estimated in 2014 that, every year, air pollution causes the premature death of some 7 million people worldwide. There is a positive correlation between pneumonia-related deaths and air pollution from motor vehicle emissions. An important cause of these deaths is nitrogen dioxide and other nitrogen oxides (NO_x) emitted by road vehicles.

INTERNATIONAL CONGRESS OF HEALTH AND ENVIRONMENT

October 23-25, 2017

Adana-TURKEY

Conclusions

The data obtained are conform the trend described in last year's air monitoring reports, which show a reduction of particulate matter level of urban air in Tirana. This demonstrates that actions undertaken on controlling the air pollution sources and improvements made in infrastructure have positively contributed in the air quality.

Possible measures that will help improve the quality of air in our country's cities are:

- Reducing the number of cars by promoting the use of public transport over the private one.
- Improving public transport
- Road network management
- Promotion of clean vehicle technologies
- Encouraging cycling.
- Growth of green surfaces
- Improving the quality of fuels.
- Providing more information to consumers and producers, such as requiring that tickets to travel on polluting forms of transport, especially air travel, should contain information on how much CO₂ pollution will be created from each journey.
- Taxing_polluters, such as carbon taxes, or taxes on plastic bags.

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INTERNATIONAL CONGRESS OF HEALTH AND ENVIRONMENT

October 23-25, 2017

Adana-TURKEY

IS-9 TECHNICALLY ENHANCED NATURALLY OCCURRING MATERIALS: WHEN NATURAL MIGHT NOT BE HEALTHY

(Teleconference)

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Introduction

Building materials contain NORM (naturally occurring radioactive elements, like ^{40}K , ^{226}Ra , and other ones). The presence of these radioisotopes might cause exposure to ^{222}Rn , ^{220}Rn and daughters: exposure due to inhalation of radon, alone, constitutes 50% of the total average exposure to “natural” background radiation in developed countries. Increased interest in measuring radionuclides and radon concentration in building materials and indoors is due to health hazards due to this exposure in persons. In view of this, there is a need to develop and introduce in both international and national levels environmentally safe and economically reasonable standard regulations, which should be based on justified radiological, social and economical legislation concepts.

TENORM

TENORM materials (Technologically Enhanced NORM) have relatively high radioactivity concentration due to manufacturing processes, or to particular treatments. We highlight the ashes of conventional fuels (especially coal and oil), or minerals that at the time of extraction bear non-negligible concentrations of primordial radionuclides.

The industrial sectors with the highest production of TENORM are those related to hydrocarbon extraction, extraction of metals and rare earths, production of fertilizers, products of coal-fired power plants waste, production of aluminum scrap, and uranium mines slug.

The construction industry recycles large quantities of material from other industries, including the ones already mentioned, with a significant production of TENORM materials. This might cause an abnormal concentration of radionuclides in structural materials, such as ^{40}K , ^{232}Th and ^{226}Ra . This leads to an increase in the indoor concentration of Rn nuclides. The most commonly used materials in the building industry that deserve attention are the following: fly ashes and non-volatile of fossil fuels, porphyry, anhydrite, clay, marl and other rocks containing high concentrations of radium and thorium. The production of fertilizers too needs thorough attention: if we examine the production process, one of the waste products of this sector is phosphogypsum. This material has long been used as a structural one and often recycled (in European Union, approximately 2 Mt per year), until it was not discovered its relatively high radioactivity. Today it can no longer be used in the construction

INTERNATIONAL CONGRESS OF HEALTH AND ENVIRONMENT

October 23-25, 2017

Adana-TURKEY

sector in the EU, however many buildings were built this way, and certain nations in the Mediterranean area do not forbid its use yet.

TENORM Production

Concerning hydrocarbon extraction, the geological conformation of most deposits (close to uranium- and thorium-bearing rocks) brings to the result of having hydrocarbons in which some natural radionuclides, such as uranium, thorium, radium and their decay products, are present. The relevant presence of ^{40}K must be pointed out too. These radionuclides can be present in the water rising to surface as result of the extraction process too. Insoluble mineral deposits can be found inside the pipelines tubes: this brings to a further contamination source for hydrocarbons. It must be pointed out that Ba or Ca have chemical affinity with Ra, so that two of its radioactive isotopes (^{226}Ra and ^{228}Ra), present in the deposits, can be diluted into water. Measurements [1] reveal that water from hydrocarbon extraction pits has the higher concentration of TENORM, reaching in some cases contact dose rates of $0.3 \mu\text{Gy/h}$. The same phenomenon bring water from natural gas extraction sites to doses up to $0.4 \mu\text{Gy/h}$. Those values are around 3-4 times the background radiation dose rate level ($0.10 \mu\text{Gy/h}$). Radon (^{222}Rn , ^{220}Rn) is a radioactive noble gas, decay product of radium, and it might be a further concern for gas extraction sites. Radon is a very volatile one: formed in the subsoil, it is extracted contemporarily with natural gas compounds, such as ethane, butane, and propane. The concentration of Radon isotopes depends on several factors: chemical conformation of the ground, characteristics of the production process, extraction speed. However, if Rn isotopes reach the soil surface, they become potentially harmful to humans and to the environment. This brings hydrocarbons (both liquid and gas) to be potentially classified as TENORM.

As far as the extraction of metals and rare earths, is concerned, NORM (Uranium and Thorium in particular) can be found in the 'tails', by-products of the production process of metals and rare earths. The waste products, extracted and brought to the surface because of the production process of metals starting from their oxides, sulfides and silicates, may become TENORM as in the case of hydrocarbon extraction, due to a technologically enhanced concentration in the metal production procedures. Titanium, copper and zirconium can be pointed out as the most remarkable metals for the production of which, TENORM byproducts can occur. For instance, for zirconium chemical species, the separation process is a quite complex one: the rock, mined as zirconium silicate (ZrSiO_4), brings thorium, uranium, and their decay products. Those NORM are inside the ZrSiO_4 crystal lattice: therefore, it is quite hard to separate them from Zr without breaking the crystal lattices. Also rare earths, such as lanthanides (mostly yttrium and other ones), are typically found in extraction sites as minerals: they can be found as building industry materials, and have NORM such as uranium, radium, thorium, and radio-potassium.

If we now point our attention to production of fertilizers, phosphate rock is a sedimentary rock that is extensively used in their production. Again, in phosphate rock, important quantities of natural radioactive substances (U, Th, Ra and their decay products) may be present. The fertilizer production process encompasses the phosphate conversion to phosphoric acid (H_3PO_4) or elemental phosphorus. Those processes artificially collect radioactive materials, with the result of having a TENORM. Phosphorite extraction of process involves a large volume of water. Modern extraction systems can recycle up to 95% of water: this brings to a rise of the concentration of radionuclides inside the wastewater. Agricultural zone, and the population within, are the most affected by this

INTERNATIONAL CONGRESS OF HEALTH AND ENVIRONMENT

October 23-25, 2017

Adana-TURKEY

phenomenon. For instance, in the zone around Essen (Germany) in 2013, the presence of radionuclides in sandy soils, produced by the phosphorus fertilizers, brought the local authorities to the necessity to purify drinking water [2]. According to an EPA (US Environmental Protection Agency) study, uranium found in the phosphate mines can be found in concentrations varying from 20 to 300 ppm. If we convert those concentrations in radioactive ones, they vary between 7 and 100 pCi/g. Also, thorium concentrations, however minor, are comprised between 1 and 5 ppm (that is, about between 0.1 and 0.6 pCi/g). Those results show us how useful the monitoring of NORM concentrations can be in such cases.

Furthermore, waste products of coal thermal power stations might be another TENORM source. Coal combustion, whether in thermoelectric power plants or for industrial applications, is a source of many different unburnt byproducts: unfortunately, they bring with them those radionuclides originally found in the burnt coal. Combustion is a transformation process, and then those by-products have to be defined as TENORM. In particular, not only the combustion of organic compounds is increasing the concentration of uranium, thorium, radium and potassium, but also their hazard is potentially higher, if those chemical species are found in the fly ash and be dispersed into the atmosphere.

As far as the production of aluminum is concerned, this process begins with the extraction of the Al mineral, that is, bauxite. Bauxite is a sedimentary rock, and is nowadays the main source for Al production. Usually, in bauxite mines, the mineral has a high fraction of impurities, thus the purifying process brings to the production of about one ton of solid waste every aluminum produced ton. These wastes may bring slight quantities of technically concentrated radioactive nuclides (uranium, thorium, radium, and their decay products).

Finally, the most straightforward process for TENORM production is uranium extraction. Great quantities of waste is created by the uranium extraction process, such as shallow earth removed from the site, discarded uranium minerals, sludge and fouling of evaporated water deposits, and secondary minerals. All those materials have excesses of radium, thorium and uranium inside. Their radiotoxicity is a major concern, and authorities must protect population living nearby, workers, and the environment. We point out, finally, that the extraction of uranium in an open pit mine is originating an amount of waste – with high natural radionuclides concentration and then a TENORM - 45 times larger than an underground mine.

Problem solution

Many investigations were conducted in the EU to assess the radioactivity of TENORM used in the construction sector and to compare their values with those of NORM. The different areas taken into consideration allow having a wider overview, and highlighting the fact that the natural radioactivity values can be very different from region to region. In certain Mediterranean areas, too, NORM concentrations suggest a strict surveillance on the final destination of those materials.

At international level, the IAEA (International Atomic Energy Agency) was the first to define TENORM after the publication of the 'Basic Safety Series No 115' in 1982. However, their use was underestimated thereafter. For the EU, the reference document is the European Directive Radiation Protection (Basic Safety Standards) 2013/59 / Euratom: it is suggested that its directives on TENORM should be implemented and strictly followed in Mediterranean area national legislations too. Field measurements of indoor Rn concentration should be foreseen, once identified the TENORM use pathways, and mitigation actions implemented.

INTERNATIONAL CONGRESS OF HEALTH AND ENVIRONMENT

October 23-25, 2017

Adana-TURKEY

Conclusions

The hazard to individuals exposed to ionizing radiation is proportional to the exposure time and nuclide concentration. A strict surveillance on the use of TENORM in the building and construction industry is necessary to avoid unjustified exposure of population.

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**IS-10 ASSESSMENT OF HUMAN AIR POLLUTION EXPOSURE - RESULTS AND PERSPECTIVES
IN DANISH STUDIES**

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Purpose

The purpose is to contribute to state-of-the-art research on human exposure to air pollution, and to studies of related health effects and their externalities¹. More specific goals are to; determine long-term as well as short-term air pollution exposure-effect relationships for various known and unknown health endpoints, to assess health effects and associated externalities in Denmark as well as in Europa related to Danish emissions of air pollution, and finally, based on this knowledge, to provide state-of-the-art guidance to environment and health management as well as to the general public within this area.

Method

In Danish atmospheric research, there is tradition for integrated monitoring and assessment of air pollution – combining measurements and model calculations in the studies of air pollution loads and levels (Hertel et al., 2007). In the air pollution health studies, the assessment of human exposure is based on either measurements (<http://envs.au.dk/en/knowledge/air/monitoring/>) from the Danish Air Quality Monitoring Program (Ellermann et al., 2016), or on calculations by the AirGIS modelling system (<http://envs.au.dk/en/knowledge/air/models/airgis/>) based on state-of-the-art chemistry-transport models (CTMs) (Hertel et al., 2013). The address is used as exposure proxy, and in most studies pollutant levels in urban background² is assumed as representative for the

INTERNATIONAL CONGRESS OF HEALTH AND ENVIRONMENT

October 23-25, 2017

Adana-TURKEY

personal exposure to air pollution. For short-term exposure assessments, measurements of fine fraction particulate mass (PM_{2.5}), coarse fraction particulates (PM₁₀ – PM_{2.5}), ozone (O₃), and nitrogen oxides (NO_x – the sum of nitrogen monoxide (NO) and nitrogen dioxide (NO₂)) from the routine monitoring program are assumed representative for the personal exposure of people with residence in the surrounding urban area. The temporal variation is the key in relation to determining health effects related to short-term exposure to air pollution, and the temporal variation in air pollution exposure is well captured by measurements e.g. from routine monitoring stations. For assessment of health effects related to long-term exposure, a good capture of the geographic distribution in air pollution exposure is crucial. For the geographic distribution of air pollution exposure, the application of CTMs makes it possible to compute pollutant levels at sites that are not well covered by the limited number of routine monitoring stations.

Findings

The Danish studies have concerned endpoints related to respiratory illnesses, cardiovascular illnesses, and various types of cancer as well as diabetes. A series of references to studies on various health endpoints are given in Hertel et al. (2013), and in this paper we will thus focus on the more recent studies. Three studies were carried out for the Danish Nurse Cohort: long-term exposure to PM_{2.5} and T2 diabetes was shown to be associated (Hansen et al., 2016), a weak association between long-term exposure to air pollution and brain cancer was demonstrated (Jørgensen et al., 2016), whereas the third study failed to demonstrate an association between breast cancer and air pollution (Andersen et al., 2016). The Danish studies have demonstrated that physical activity is beneficial, even when it takes place in polluted urban areas. Physical activity has thus been shown to reduce mortality among elderly (Andersen et al., 2015), and increased exposure to air pollution during exercise was shown not to outweigh beneficial effects of physical activity on the risk of asthma and COPD (Chronic Obstructive Pulmonary Disease) (Fisher et al., 2016). Radon is suggested to increase risk of lung cancer, and we have investigated this risk and whether the risk may be increased by co-exposure to air pollution (Brauner et al., 2012); our study showed, however, only weak association between long cancer and radon. Agricultural emissions contribute to the overall PM_{2.5} loading, but a new study indicates that gaseous ammonia and particulate ammonium may also play a more direct role for developing new onset asthma (Holst et al., 2017). Since this is a new finding, these results still need to be confirmed by other studies. Analyses have shown that peak pollen concentrations may coincide with elevated ozone concentrations (Ørby et al., 2015), and it has been suggested that pollen exposed to air pollution may exacerbate the allergic reaction (Molfino et al., 1991). This was, however, not supported by climate chamber studies where study subjects have been exposed to pollen allergen and ozone under highly controlled conditions (Ørby et al., 2017). The overall health assessments have shown that air pollution causes about 4000 annual premature deaths in Denmark, and the associated external cost amounts to about 30 billion DKK per year (Brandt et al., 2016).

Discussion

Researchers in environmental medicine and epidemiology often apply Land Use Regression (LUR) models as a statistically based alternative to CTMs. In the ELAPSE project, LUR is the basic tool, but for the Danish part of the project, also CTMs are applied, and the two approaches are compared (<http://www.elapseproject.eu/>); the Danish part includes health assessments where the entire Danish

INTERNATIONAL CONGRESS OF HEALTH AND ENVIRONMENT

October 23-25, 2017

Adana-TURKEY

population is used as cohort. Most studies on determination of relationship between exposure and health effects are using pollutant levels at the address as proxy for the personal exposure. The ideal assessment would be based on time-activity pattern of the single cohort members. Exposure would then be determined from tracking the cohort member and integrating exposure from the pollutant levels in various micro-environments that this individual meets during the day. We are investigating possibilities for using various types of low-cost sensors personal exposure monitoring (PEM) and/or fixed site monitoring. PEM may be used to study how representative address level exposures are for the actual personal exposure, and fixed site monitoring could potentially help validating CTMs in relation to reproducing air pollution levels at street types poorly covered in routine monitoring.

Residential wood combustion is the largest source of local PM_{2.5} emissions in Denmark, and shows significant spatial variation during the colder seasons. About 20% of the European population suffer from hay fever which is now considered as a mild form of asthma, but the monitoring of airborne allergens (mainly pollen and fungal spores) is still based on technology developed in the 1950s – resource demanding as it is based on manual counting in microscope and providing data on coarse temporal and spatial resolution. The method also only determines the pollen/spore count, and not the amount of allergen which may vary.

Conclusion

The DK air pollution exposure and health studies benefit from access to unique health registry data as well as other registry data relevant in air pollution modelling. Danish studies have thus shown relationships between exposure and health effect that are stronger than what have been found in other countries; this is believed to be due to the access to high quality health data but also state-of-the-art exposure assessments. Still there is substantial room for improvements and one of the ways that will be explored in the future is to include location-time-activity pattern and tracking of cohort members with GPS sensors or smartphones and to integrate exposure from various micro-environments. First step will be to include information about workplace and estimation of exposure during commuting between home and workplace. Another path is to improve assessment of exposure/co-exposure to airborne allergens; mainly pollen and fungal spores.

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INTERNATIONAL CONGRESS OF HEALTH AND ENVIRONMENT

October 23-25, 2017

Adana-TURKEY

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October 23-25, 2017

Adana-TURKEY

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INTERNATIONAL CONGRESS OF HEALTH AND ENVIRONMENT

October 23-25, 2017

Adana-TURKEY

IS-11 MUNICIPAL SOLID WASTES MANAGEMENT IN TURKEY

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Decision makers in developing countries are struggling to solve the present problems of solid waste management. Prioritisation and ranking of the most important indicators that influence the waste management system is very useful for any decision maker for the future planning and implementation of a sustainable waste management system. Often, decision makers are faced with complex and deficient information that might have major economic and environmental implications. In Turkey, the amount of collected MSW in 2014 was 28 million tons, equivalent to 90 % of the total generated MSW. The share of MSW going to landfill was increased by 114% in the years between 2001 and 2014. The number of sanitary landfill sites increased from 15 in 2003 to 82 in the 3rd quarter of 2016. According to 2016 National Waste Management Plan and Action Plan data, 61.07 % of the municipal waste is sent to sanitary landfills and 28.25 % is dumped into municipal dumpsites. 11 % of the MSW (packaging waste included) was reported as recycled, composted or disposed of by other methods. So, the number of licensed recycling and recovery facilities has skyrocketed in the last decade. In 2003, there were 46 recycling and recovery facilities for different recyclable waste types, whereas by 2015 the number of licensed facilities increased to 1226. The aim of this study is to evaluate municipal solid waste management systems in Turkey and propose the solutions .

Keywords: Municipal Solid Waste, Recycling, Composting, Incineration, Landfill.

INTERNATIONAL CONGRESS OF HEALTH AND ENVIRONMENT

October 23-25, 2017

Adana-TURKEY

IS-12 WHERE TO MOVE THERE IS A HEALTH: EXERCISE DRUGS

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The inability to make healthy urban environmental plans is a big problem with the immobile lifestyle imposed by the technology and the diseases brought about by the experience of today's society as an inevitable result.

Today, Turkey lives in cities that are close to 80 percent of the population. If we are in a habit of making regular sports and making physical activities consciously part of our lives in city life, there is little to be said.

Numerous diseases are caused by irregular feeding and immobility.

One of them is high blood pressure. Inactivity and irregular feeding disturbs heart rate and health. This causes high blood pressure.

Researchers have found that exercise and diet are more effective than medication to lower high blood pressure.

According to the results of a research in Archives Internal Medicine's US health journal, people who exercise for several hours a day, every hour for one hour, could keep the tension under control without taking medication.

At the end of the study, it was determined that the subjects who exercise decreased their mean blood pressure by 7 and their blood pressure by 5 points.

According to the research done, young people working in the office for long hours are shortening the hind leg legs, which can cause chronic back pain in the future. While young people living in motion are more likely to have cardiovascular diseases, they also increase the risk of developing cancer and depression.

Medical treatment and medical nutrition as well as medical exercise have begun to take place in the prevention and treatment of diseases.

Conditions such as green spaces, recreation and sports areas, non-compliant construction, and lack of regular solid waste storage areas are disturbing the city life away from the city center.

For this purpose, healthy city planning presents the methods to make all the negativities disappear and to make community life healthy and livable.

INTERNATIONAL CONGRESS OF HEALTH AND ENVIRONMENT

October 23-25, 2017

Adana-TURKEY

IS-13 HEALTHY URBAN ENVIRONMENT: ECOLOGICAL CITY AND SMART CITY APPROACHES

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Nowadays, authorities point out that continuous global growth and the tendency towards the depletion of natural resources may cause the collapse of ecological balance and irregularity in global mechanism in the middle of 21st Century. Experts receive emphasize on that with the modification of existing development tendency, sustainable ecological and economical balance might be achieved and can be kept for the future. Therefore, 'sustainability' concept which is frequently mentioned in various international conferences, remains on the agendum of public opinion and takes a valuable place amongst the subjects of urban planning calender. Urban planning reveals economical development alternatives on the other hand it aims to improve planning approaches and solution options against specific problems caused by economical growth and life styles. Various planning and urban concepts such as impact of ecological footprint, strategies for carbon emission reduction, efficient usage of energy, conservation of water resources are developed to decrease the negative influence of human on Earth and to extend the life span of the planet that we live on. In this respect, two critical topics are located at the center of urban planning and designing agendum. 'Cimate Change' and 'Energy Efficiency'. These two critical topics requires cities to be planned with smart city and ecological city approach and strategies. The focus point of this paper consists of the concept of smart city and ecological city approach for the future of urban planning.

INTERNATIONAL CONGRESS OF HEALTH AND ENVIRONMENT

October 23-25, 2017

Adana-TURKEY

IS-14 VARIATION OF CHEMICAL COMPOSITION OF RAINWATER IN DIFFERENT PARTS OF TURKEY: LONG-TERM TRENDS SINCE 1990

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Ionic composition of rainwater is discussed to assess sources of inorganic ions in atmosphere in the Eastern Mediterranean and Black Sea regions. Discussions presented in this study bases on more than ten years of wet-only rain sampling in 10 rural locations in Turkey. Sampling stations were established and event-based, samples were collected by State Meteorological Services, Research department. Collected samples were analyzed for major ions (SO_4^{2-} , NO_3^- , Cl^- , NH_4^+ , H^+ , Na^+ , Mg^{2+} , Ca^{2+} and K^+) using ion chromatography. Data generated in earlier studies in different parts of Turkey are also included in discussions.

Keywords. Rain water, composition, ions, Eastern Mediterranean, Black Sea

INTRODUCTION

Precipitation is an important scavenging mechanism for pollutants in atmosphere, but it is also an important input mechanism of atmospheric pollutants and nutrients to marine and terrestrial ecosystems (Itahashi et al., 2015; Aas et al., 2007; Al Momani et al., 1998). It had been repeatedly shown that atmospheric deposition of pollutants to marine ecosystems can be more important than their corresponding riverine inputs (Sugimoto and Tsuboi, 2017; MacDonalds et al., 2016). Composition of rainwater can also be used fingerprints in source apportionment studies (Motelay et al., 2007; Gao et al., 2015). There had been some efforts to determine chemical composition of rainwater in Turkey (Al Momani et al 1995; 1995b; 1997; 1998; Kaya and Tuncel, 1997; Alagha and Tuncel, 2003; Turkum et al., 2008; Gaga et al., 2009), but data is too scarce to understand factors behind spatial variations in concentrations of ions and trace elements.

This manuscript includes data collected at 10 rural locations in Turkey. Samples were collected by Turkish State Meteorological Service, Research department. Collected samples were analyzed for major ions, including SO_4^{2-} , NO_3^- , NH_4^+ , H^+ , Cl^- , Na^+ , Mg^{2+} , K^+ and Ca^{2+} . Approximately 4000 samples were collected and analyzed between years 2004 and 2016 in all stations. Data was evaluated temporal and spatial variation in ionic composition of rain water in Turkey.

EXPERIMENTAL

Wet-only rain samples were collected at 10 rural stations by Turkish State Meteorological Services (TSMS), Research Department. Samplers were situated at Amasra (Located outside the town. Oldest station, operated since 2004, approximately 800 samples were collected), Antalya (Located at research forest plot at

INTERNATIONAL CONGRESS OF HEALTH AND ENVIRONMENT

October 23-25, 2017

Adana-TURKEY

approximately 20 km from the city, operating since 2005, 485 samples were collected between 2005 and 2016), Balıkesir (Located at Meteorological radar outside the city, 561 samples were collected between 2004 and 2016), Çatalca (Located at meteorological radar, 936 samples were collected between 2005 and 2016), Marmaris (Located at meteorological radar, which is approximately 8 km from town, 300 samples were collected between 2011 and 2016), İzmir (Located at Çatalkaya radar site, 390 samples were collected between 2011 and 2016), Hatay (Located at Meteorological radar site, 178 samples were collected between 2013 and 2016). Trabzon (located at meteorological radar site, 131 samples were collected since 2014), Çamkoru (located at Çamkoru park, which is 80 km to the NW of Ankara, 145 samples were collected between 2014 and 2016), Yatağan (located at the town of Yatağan, which is approximately 30 km to the NW of the city of Muğla. 120 samples were collected between 2012 and 2016). These locations are depicted in Figure 1.

Collected samples were analyzed for major ions (H^+ , SO_4^{2-} , NO_3^- , NH_4^+ , Cl^- , Na^+ , K^+ , Ca^{2+} and Mg^{2+}) by ion chromatography (Dionex, Model 100). All of these locations, except for Amasra and Yatağan stations are rural sites, which are far from settlement areas. Thus data generated provide regional characteristics of rainwater



Figure 1. Locations of rain water sampling stations

composition. A total of 4100 samples were collected and analyzed between 2004 and 2016, generating one of the largest data sets available in the region. Sampling continues in all stations, but only samples collected until November 2016 are discussed in this manuscript.

RESULTS and DISCUSSION Average concentrations of ions measured in this study is depicted in Figure 2. With some exceptions, median concentrations of ions are not dramatically different from each other. The highest H^+ concentration is measured at Amasra station, which is not surprising because SO_4^{2-} concentration is also one of the highest in data set. These together imply that rainwater intercepted on our Black Sea coast is fairly polluted. The highest SO_4^{2-} concentration is measured at Yatağan, which demonstrate the influence of Yatağan thermal power plant (630 MW capacity, approximately 4 km from the sampling point) on quality of atmospheric parameters in the region. However, H^+ ion concentration at Yatağan station is not particularly high, which is probably due to high Ca^{2+} concentration at Yatağan, as can be seen in the figure. Calcium concentration measured at Yatağan station is approximately a factor two higher than Ca concentration measured in other stations. Ca, which is measured in rainwater is in the form of $CaCO_3$, which is a base and neutralize acidity in rainwater.

Concentration of NO_3^- ion is similar in all stations. Concentrations of Na and Cl, which are good indicators of Sea Salt, are high at Hatay station, which is due to close proximity of this station to coast (approximately 500 m). Concentrations of these ions are also high in other coastal stations, like Amasra.

The most striking feature in data set is extensive neutralization of acidity. Concentration of SO_4^{2-} measured at our rain samples are higher than typically reported in EMEP network. We calculated that if all of the SO_4^{2-} and NO_3^- measured in our samples are in the form of H_2SO_4 and HNO_3 , pH at the stations is expected to change between 3.6 and 4.2, but measured pH values range between 5.6 at Amasra station and 6.9 at Çamkoru station. This difference indicates that rainwater is acidic originally, but free acidity is neutralized before it reaches to ground. This pattern is clear in frequency distribution plots prepared for pH in each station. The pH frequency distributions at Çatalca and Hatay are given in Figure 3 as example. Frequency distributions prepared for other stations in the network are very similar. Two common bases can potentially neutralize acidity in rainwater are NH_3 , which is emitted from animal grazing and use of N-containing fertilizers and the other one is $CaCO_3$ in soil. A regression of H^+ concentration against Ca^{2+} and NH_4^+ demonstrated that $CaCO_3$ is responsible most of the neutralization, which is not surprising because soil in the Mediterranean basin is highly alkaline (Alagha and Tuncel, 2003).

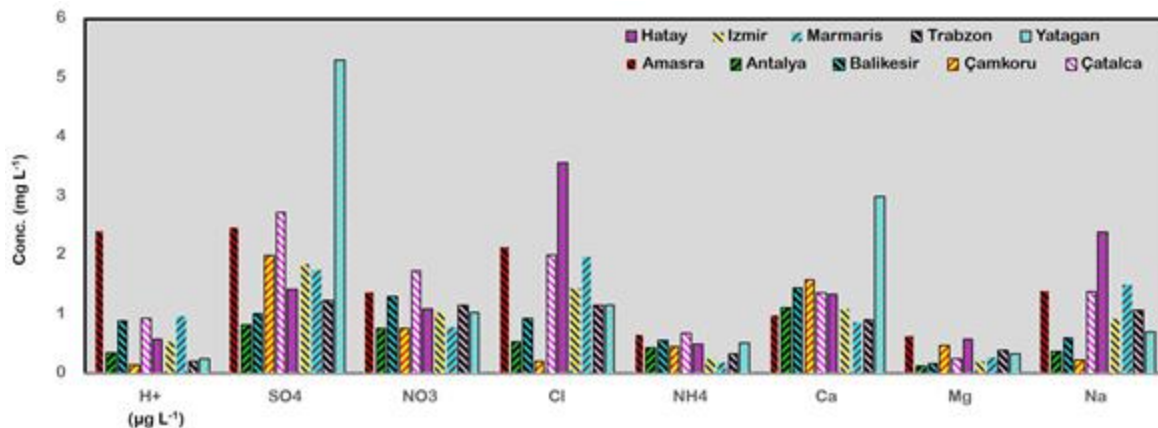


Figure 2. Median concentrations of measured ions in different parts of Turkey

INTERNATIONAL CONGRESS OF HEALTH AND ENVIRONMENT

October 23-25, 2017

Adana-TURKEY

IS-15 EFFECTS OF ENDOCRINE DISRUPTORS ON HEALTH

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Endocrine disruptors are environmental substances, foods and commercial products causing disruption on the stage or stages of hormone synthesis, secretion, transport, metabolism, binding, elimination. The results obtained from animal models, clinical observations and epidemiological studies indicate that endocrine disruptors are important threat to public health and this issue is attractive enough in recent times. These chemicals negatively effect male and female reproductive systems, breast development, breast cancer, prostat cancer, neuroendocrinology, thyroid, metabolism, obesity and also cardiovascular endocrinology.

Endocrine disruptors act on many systems and their pathways, shows estrogenic, antiandrogenic, thyroid, peroksisome proliferator activating reseptör, retinoid and other nuclear reseptors, steroidogenic enzymes, neurotransmitter reseptors. Pesticides, industrial chemicals, plastics, fuel and many other common used chemnicals are some of the endocrine disruptors. Bisphenol A (BPA) is a monomer used to make hard, polycarbonate plastics. Polycarbonate plastics are used in many hard sport water bottles, infant bottles,, food cans and some medical tubing and devices contain BPA. Phthalates are man-made chemicals and are used in soft, flexible plastics, polyvinyl chloride (PVC) products, and are found in medical devices, many consumer products, flooring, and a variety of personal care products (such as some shampoos and lotions).

If the endocrine effect occurs especially during a critical period of body development, the adverse effects can be more pronounced. It can affect not only the exposed person but also subsequent generations. This effect may cause either germline mutation or non-genomic effect such as DNA metilation and histon acetylation.

It is important to increase the number of experimental and clinical researches related to endocrine disrupters, to build community awareness to protect and reduce the contact. Some preventive actions and lifestyle changes for exposure to endocrine disruptors are as follows: Women planning pregnancy should use safer items, to buy low fat dairy products such as skim milk and low fat cheeses and avoid high fat foods such as cream, whole milk, and fatty meats as much as possible, to buy fresh or frozen fruits and vegetables when possible and avoid canned and processed foods, to take care of buying tems that are phthalate-free or BPA-free, when possible, to minimize use of personal care products, to use glass, stainless steel, ceramic, or wood to hold and store foods instead of plastics. Also not to microwave food/beverages in plastic or use hard polycarbonate plastics for hot liquids. And to avoid plastics marked 3 (PVC or vinyl), 6 (polystyrene foam), or 7 (other, can contain BPA) on the bottom, which are most likely to contain these chemicals.

INTERNATIONAL CONGRESS OF HEALTH AND ENVIRONMENT

October 23-25, 2017

Adana-TURKEY

IS-16 SEASONALITY, CLIMATIC CHANGES, PSYCHIATRIC DISEASES

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INTRODUCTION

Although recognition of seasonal influences on psychiatric disorders dates back to antiquity (1), documentation of seasonal is not more than two decades old (2). The instability of meteorological factors, such as air streams, atmospheric pressure, temperature, humidity, concentration of air-suspended particulates, level of atmospheric ions and electric field intensity, or some of them acting together, may cause multiform disorders in the normal life of sensitive persons: a growing incidence of depression, seasonal affective disorders, suicidal behavior, aggravation of chronic diseases, headache, migraine and many other symptoms, where the percentage of weather-sensitive subpopulation can reach 85% (3). The nervous system usually responds first to the changes in its environment and greatly influences the endocrine system; therefore, the most common weather-triggered biological reactions have for the most part a psychological, emotional or behavioral character (4). Some psychiatric symptoms have been attributed to the presence of high concentrations of small positive ions in the atmosphere, and studies of subjects exposed to the sharav have shown a marked increase of urinary serotonin at the time of the symptoms (5). Atmospheric humidity is one of the factors influencing the production and availability of small ions, which in some cases are generated by shearing of the water droplets. Seasonal variations have been reported in a number of measures of serotonin function with being low in spring and peak in summer/autumn (6-8). In some studies have suggested that increasing amounts of sunlight facilitate affective relapses, and that patients with an affective predisposition are more sensitive to the effects of light on decreasing nocturnal melatonin levels (8).

PSYCHIATRIC DISEASES

Distinct seasonal influences have been reported on admission patterns between the different subtypes of mood episodes in bipolar disorder patients (9). As regards manic episodes, the lines of evidence have largely suggested a spring/summer peak in related admissions however, the findings on seasonal influences in depressive episodes have been less consistent (10). The spring or summer peak in mania has not been a universal finding, as some investigators report bimodal peaks in spring and fall. Furthermore, other studies have failed to find any seasonal variation in admission rates for mania (11). It has reported that first manic episode tends to show a seasonal variation, with peaks in spring and fall, which is significantly associated with hours of sunshine and sunlight radiation (6). Gender differences in the seasonality of mania have been reported in some other studies and seasonal variations were only observed in women (12). Mixed episodes, very little attention has thus far been afforded to seasonal variations in admissions for such episodes, although a unique late summer peak has been suggested (13). Seasonality of Bipolar Disorders mixed episode has studied at eastern of Turkey at Blacksea in Rize that found winter admissions were most (14). Seasonality is shown in all three subtypes of bipolar disorder

INTERNATIONAL CONGRESS OF HEALTH AND ENVIRONMENT

October 23-25, 2017

Adana-TURKEY

mood episodes, although different seasonal patterns were observed in the admission rates. That has found that climatic variables such as rainfall, hours of sunshine and temperature have a significant association, in varying directions, with the admission rates for manic, depressive and mixed/ unspecified episodes and has clearly demonstrated seasonality among bipolar patients with different subtypes of mood episodes (6,15). Findings from various temperate regions have quite consistently shown a spring/summer peak for the occurrence with the exception of a few negative studies (16). While many studies of seasonal variation in psychiatric admissions focus on the affective disorders, some authors have reported seasonal variation in schizophrenia, for example the summer peak in admissions for schizophrenia reported by several studies. It has examined first admissions for psychoses in England and Wales in 1976. They found a summer peak in mania in both sexes but for schizophrenia only in females. This led them to suggest that bipolar disorder and schizophrenia may be either closely related or have a common cause in females (17-19).

The prevalence and severity of psychiatric disorders such as anxiety and affective disorders are reported to vary between different months. These studies are based on both self-report questionnaires and diagnostic interviews. General anxiety disorder, panic disorder, obsessive-compulsive disorder, tension-anxiety and substance abuse are reported to be most prevalent in autumn and winter months (20-21). It has been studied that the prevalence of seasonal mood changes in patients with obsessive-compulsive disorder (OCD) and explore the contribution of seasonality in mood to the severity of OCD. The prevalence of OCD has been found to be the highest in autumn and the lowest in summer. Serotonin is also the immediate precursor in the synthesis of melatonin, which is a hormone thought to be involved in the neurobiology of OCD. Several studies have reported that the pattern of melatonin secretion is also altered in OCD. It has found that patients with OCD and controls had similar circadian rhythms of plasma melatonin, but the former had lower levels of 24-h melatonin secretion (8,22). There was a concentration of suicides but not homicides in the summer months. The concentration was most pronounced at high latitudes. Studies were reported an increase in the incidence of suicide in fine weather conditions and with more hours of sunshine (23). A number of studies have examined the impact of meteorological factors on suicide and found that lower suicide rates were associated with increased rainfall, decreased temperature, decreased humidity, and increased sunshine (23-25).

The understanding of human sleep has mainly been established in countries in temperate climates and comfortable conditions. Human sleep is sensitive to minor environmental changes. Objective measures of sleep have been made under diverse environmental conditions, but remain still quite limited in number because of the difficulties to perform sleep recordings (26). Polysomnography, a non-invasive technique, is used to record sleep and wakefulness in humans. In polysomnographic examination, 6-channel EEG, 2-channel electrooculography, chin electromyography, oro-nasal air flow with nasal cannula, arterial oxygen saturation, respiratory effort with thoracoabdominal bands, and electrocardiography recordings is using. Different stages of sleep and wakefulness are distinguished: active and quiet wakefulness; rapid eye movement (REM) sleep; nonrapid eye movement sleep (NREM sleep), with stages 1 and 2 of light sleep and stages 3 of slow-wave sleep (SWS) (27). Sleeping on hot nights leads to sleep disturbances. Mild heating prior to sleep enhances SWS; this is observed either by taking a hot bath or by sauna exposure. Daytime exposure to climatic heat led to diachronic changes in sleep

INTERNATIONAL CONGRESS OF HEALTH AND ENVIRONMENT

October 23-25, 2017

Adana-TURKEY

patterns, with an increase in SWS which seemed to be proportional to the environmental heat load. the conjunction of exercise and external climatic heat load led to a diachronic increase in SWS. In dry tropical climate they were examined in the “cool” season and the “hot” season. Baseline REM sleep values were high in both seasons and were not influenced by the season. Sleeping under warm humid conditions did not lead to the changes observed in a hot and dry climate. Sleep was also unstable, but there was no increase in SWS and REM sleep compared to temperate conditions (26).

CONCLUSION

As a result of bioclimatic variation and seasonal changes may be affected in many psychiatric disorders. Clinicians must take into account to this conditions when assessing their patients.

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INTERNATIONAL CONGRESS OF HEALTH AND ENVIRONMENT

October 23-25, 2017

Adana-TURKEY

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INTERNATIONAL CONGRESS OF HEALTH AND ENVIRONMENT

October 23-25, 2017

Adana-TURKEY

IS-17 WHY DO WE HAVE TO RECYCLE AND WHERE DO WE LEAD?

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The change in the direction of society from agricultural to machine have brought environmental pollution due to rapid changes in human population and behavioral change. It is known that environmental impact of any type of input increases proportional with population, welfare and technology.

Municipal solid waste production rate has been varied 0.45 (South Asia) -2.2 (OECD countries) kg/ /capita day the year of 2012. This rate estimation for the year 2025 ranges from 0.85 to 2.1 kg/capita/day (World Bank Report). This estimated value is 2.2 kg/capita/day for Turkey. The global solid waste content due to economic activities and households in EU mainly domanites due to construction with a 37% and following mining and other activities. It is accepted that with these rates the carrying capacity of earth will not be enough.

Recycling provides an opportunity for cities to increase the lifespan of sanitary landfills, to reduce the costs of solid waste management, to decrease environmental problems from waste treatment by reincorporating waste into the productive cycle . Overall goal of waste management is to reach the point called as sustainable development. Recycling is a preliminary stage of sustainable development. European and developed other countries have been working on new approach about looking at waste as a source. New approach is to reach the point where no waste or discharge available at the end of economic activities to protect new generation resources.

In this study, all these issues have been discussed to understand recycling activities importance and future trends that could lead creation of bussines through recycling, prevent pollution and use waste as a source for the protection of next generation resources and not to exceed carrying capacity of earth.

INTERNATIONAL CONGRESS OF HEALTH AND ENVIRONMENT

October 23-25, 2017

Adana-TURKEY

IS-18 ENVIRONMENTAL ASPECT OF ENDOCRINE DISRUPTING CHEMICALS (EDCS)

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Chemicals have become a part of our daily life, sustaining many of our activities, preventing and controlling many diseases, increasing agricultural productivity. In our modern societies human being come to a point that life would be nearly impossible without using chemicals. By the year of 2016 number of registered chemicals reach to 90 million and the registry is updated with an approximate 15,000 additional new substances daily. More substances and rising production mean more storage, transport, handling, use and disposal of chemicals. The whole lifecycle of a chemical should be considered when assessing its dangers and benefits. Many of these chemicals have their effect on environment. These effects can be classified under many titles. However according to World Health Organization (WHO) and UNEP through the International Programme on Chemical Safety (IPCS), a joint programme of WHO, UNEP and the International Labour Organization, some of these chemical pollutants can affect the endocrine (hormonal) system, and certain of these endocrine disruptors may also interfere with the developmental processes of humans and wildlife species. These chemicals commonly known as Endocrine Disrupting Chemicals (EDCs). World Health Organization, International Programme on Chemical Safety also known as IPCS define the EDCS “An endocrine disruptor is an exogenous substance or mixture that alters function(s) of the endocrine system and consequently causes adverse health effects in an intact organism, or its progeny, or (sub) populations.” The issue has been increasingly discussed for the last 30 years. According to the report they published in 2002, the general conclusions were that although it is clear that *certain environmental chemicals can interfere with normal hormonal processes, there is weak evidence that human health has been adversely affected by exposure to endocrine-active chemicals. However, there is sufficient evidence to conclude that adverse endocrine-mediated effects have occurred in some wildlife species. Laboratory studies support these conclusions.* However, since 2002 lots of scientific works were carried out and issue was broadly discussed in many scientific committees. Now, the adverse effect of EDCs are better explained. Hence, the aim of this abstract is to indicate the environmental aspect EDCs.

KEY ENVIRONMENTAL CONCERNS

It is well known fact that both human and all the other living organisms need healthy environment in order to sustain their life. Last 100 years many of environmental pollutants posing threat to ecosystem defined. In those pollutants, there has been growing interest on EDCs for the last 30 year. Studies and field observations indicated that endocrine related disorders increased in humans and also endocrine related problems in wildlife populations were observed. In some countries nearly up to 40% of the male population have low sperm counts which is not enough for the reproduction.

INTERNATIONAL CONGRESS OF HEALTH AND ENVIRONMENT

October 23-25, 2017

Adana-TURKEY

So far, nearly 1000 chemicals were described as endocrine disruptors. Meanwhile, this is only the tip of the iceberg. There are so many chemicals are on the list to be tested as potential EDC and many of the commercially used chemicals have also not been tested yet. The effect of EDCs is not limited to a local area but the effect is Global. Due to the both natural and manmade transportations process EDCs can now be observed even in Arctic's. They can be easily found food we ate, air we breathe and water we drink. Most common examples of EDCs include DDT and other pesticides; bisphenol A (BPA) and phthalates used in children's products, personal care products and food containers; and flame retardants used in furniture and floor coverings, human and veterinary pharmaceuticals. In addition to the known EDCs, there are countless suspected EDCs or chemicals that have never been tested. As it can be seen from the list above all those chemicals man made synthetic or in some cases natural and resistant to degradation in the environment. Those chemicals commonly known as xenobiotics. Compare to the past 20-30 years, it now clearer that both humans and other living organisms are exposed to those EDCs than it was previously thought. Particularly food and drinking water are the key contamination sources.

OCCURRENCE AND FATE OF EDCs

Every man made or natural chemicals join the waste stream and released to the environment once completed their life span. Once released into the environment those persistent chemicals transported via water or by atmosphere to far locations where they were discharged. During these transportation process, EDCs may join the food webs and also biomagnified by related organisms. There are basically two sources of EDCs; they are diffuse and point sources. For example, agricultural run-off is the good example of diffuse sources. Meanwhile wastewater treatment plants is the point sources of EDCs. Many chemicals, once they were used in home, they are transported to the waste water treatment plants. For example pharmaceutical chemicals, personal care products are good examples of home sources of EDCs. Human and veterinary drugs are getting part of our lives more and more in all over the World. More than 3000 different pharmaceuticals are in use in Europe alone. Particularly use of nonsteroidal anti-inflammatory drugs (NSAID) exceeds hundreds of tons per year in many European countries. Occurrence and the fate of pharmaceuticals and personal care products in environment gained much more attention in past decades. In recent years, many pharmaceutical compounds from the various groups were detected in domestic wastewater before and after treatment. There are many researches are currently going on for monitoring of these chemicals in both treatment works and aquatic environments. In recent years finding of these chemicals in aquatic environment and the showing their negative effects on aquatic life were caused great worry on these chemicals Most of the pharmaceuticals are resistant to biological degradation and they are discharged to the environment from treatment works partially or with no degradation. Domestic wastewater treatment plants are designed to remove certain organics, nitrogen and phosphorous receiving the plant regularly. Therefore, due to the different structure of pharmaceuticals or their metabolites, they are not degraded or partially degraded during the treatment. Generally, human pharmaceuticals undergo some metabolic transformations after taken by patient. Some pharmaceuticals breakdown by human metabolism, however, most of the pharmaceuticals excreted via urines and faeces without any degradation. Activated sludge treatment processes are the most common method for the treatment applications of domestic wastewaters. Despite the resistance of pharmaceuticals to biological oxidation, treatment of these chemicals via domestic wastewaters

INTERNATIONAL CONGRESS OF HEALTH AND ENVIRONMENT

October 23-25, 2017

Adana-TURKEY

takes place at municipal wastewater treatment plants using the activated sludge process. Therefore; domestic wastewater treatment plants act as point sources of these chemicals to discharge aquatic environment and plays important roles. Therefore, it is important to know the behaviour of these chemicals in activated sludge treatment. In conventional activated sludge process, various mechanisms are responsible for the removal of organic matters including biodegradation, volatilization, photochemical reactions and sludge adsorption. For many toxic and recalcitrant organic compounds entering biological wastewater treatment processes, non biological or abiotic losses may be more significant than biodegradation. Abiotic losses include adsorption of the compound to the mixed liquor solids in the reactor with subsequent transport out of the system by the waste sludge and volatilization with release of the compound to the surrounding atmosphere. For certain compounds adsorption can be more significant than biodegradation or volatilization.

Due to the resistant structure of EDCs, once enter to the waste water treatment plant, some of those chemicals adsorbed by the sludge. It was already reported that some organic substances, which are resistant to biooxidation because of their chemical structure, can be adsorbed by activated sludge. In fact sorption is considered to be the primary removal mechanism for many recalcitrant chemicals in aerobic biological treatment systems. Later on, when the sludge removed from the treatment works may contain EDCs. These adsorbed EDCs by the sludge later on released to the environment for the example when the land application method used for the sludge disposal.

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INTERNATIONAL CONGRESS OF HEALTH AND ENVIRONMENT

October 23-25, 2017

Adana-TURKEY

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INTERNATIONAL CONGRESS OF HEALTH AND ENVIRONMENT

October 23-25, 2017

Adana-TURKEY

IS-19 PHYTOTOXICITY TEST METHOD APPLICATION IN ENVIRONMENTAL ENGINEERING PROBLEMS

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Toxic pollutants are dramatically increasing in the environment of soil and water. Heavy pollution in environment is the most important ecological problem. Heavy metal and long life organic and inorganic compounds accumulation in water, soils living organisms have an important influence for life. It is not only on the water, soils and functions of ecosystem but also on the health of living organisms via food chains. Heavy pollutants have important causes in plant structure decreases the crop quality and yield due to inhibition of plant physiological activity, decreasing fertility, damaging and killing plants. Tolerance of plant to pollutant toxicity depends on plant variety, element type, time of stress, plant tissue and organ. Therefore, knowing like a pollutant quantity, and as well as damage formation process is important for plant growth and development. In our investigation different plants were tested to measure toxicity of pollutant concentration in soil and aqueous solution to test level of hazardous matters. Seedling of the plant seeds was mostly inhibited. There was different tolerance levels pollution concentration by the different test organisms.

There are several methods that are used to measure concentration of pollutants in the environmental conditions in the laboratory after cleaning-up processes at very sensitive level by using well developed modern and expensive equipment. Most of these methods are expensive and measurement takes time with clean-up process using different methods. Toxic level measurements of pollutants as well as pesticides, heavy metals *etc.* are very important, because the usage of artificial agricultural chemicals are outrage and unconsciously high at some part world countries as well as Turkey. Sometimes, measured concentrations may not be effective for the living organisms in environmental conditions. Effect of pesticides residue concentrations on the uncontrolled organisms in their natural environmental conditions must be known. For this reason, effect of some hazardous chemicals in different concentration was investigated using different phytotoxicity test methods and compared their sensitivity. These measurements are basic methods that can be used in basic laboratory without using expensive and quality equipment. They may be also developed and used by professional personal for further environmental investigations. The earned results in a very short period of time can describe the real biological effect occurring during the biological materials growth.

Toxicity tests are used to expose test organisms to a medium-water, sediment, or soil-and evaluate the effects of contamination on the survival, growth, reproduction, behaviour and/or other attributes of these organisms. These tests may help to determine whether the contaminant concentrations in a site's media are high enough to cause adverse effects in organisms. Generally, toxicity tests involve collecting samples of media from a site and sending them to a toxicity laboratory, where the tests are performed. On occasion investigators measure toxicity by exposing test organisms to soil or water on site-these are known as in situ tests. As the general guidelines at

INTERNATIONAL CONGRESS OF HEALTH AND ENVIRONMENT

October 23-25, 2017

Adana-TURKEY

the end of this review work indicate, not all sites require toxicity tests. But where they are used, toxicity tests can contribute to ecological risk assessments in specific ways and at different stages in the assessment.

Ecological risk assessment for terrestrial primary producers is based on toxicity data obtained in single species tests. This scheme has been criticised in terms of the number and types of species assessed as well as in the very narrow set of experimental conditions explored. Ways to improve phytotoxicity tests and risk assessments have been proposed, but have been so far inconclusive for numerous reasons. First, difficulties arise when attempting to extrapolate from simple tests to community level assessments. Secondly, more complex tests such as microcosm or mesocosm studies are time-consuming, costly and have not been standardised for terrestrial primary producers. Likewise, the use of ecologically relevant species depending on the geographical area of concern is an alternative technique that needs to be validated for plants and other organisms. Lastly, the trait-based approach which is emerging as a promising avenue to improve species selection and risk assessment requires refinements to prove its usefulness with regards to terrestrial primary producers. Much progress has been achieved since phytotoxicity tests were designed in the early 1980s. Current phytotoxicity tests are useful to inform regulators and conservationists on the inherent toxicity of a given herbicide to a narrow range of species (usually crops) grown under standard laboratory conditions. Unfortunately, risk assessment tools are limited by the types of tests presently provided and lack the means to assess and extrapolate effects on wild species diversity, biodiversity, ecosystem services and functions.

The purpose of presentation is to present current knowledge on methods employed to perform phytotoxicity tests and risk assessments and to highlight shortcomings in relation to biodiversity and ecosystem services. Ecosystem services are benefits provided to humankind by a multitude of organisms present in natural ecosystems. Several studies were conducted between 2001 and 2016 aimed at investigating some of the deficiencies in phytotoxicity testing (new and existing data are presented). Herbicide toxicity responses were similar when comparing a suite of crop versus wild species. However, the validity of the evaluation was limited because of the narrow types of species tested. The number of species tested, currently set between six and ten, appears insufficient. The trait-based approach (i.e. the use of plant attributes to predict species sensitivity to toxicants) can be used to improve species selection. This approach puts more emphasis on the shared biological characteristics that affect plant function within ecological communities rather than on plant phylogeny. Results presented showed that further studies are needed. In test guidelines, protocols require that crop species be sprayed as young vegetative plants, which is assumed to be the most sensitive growth stage to herbicides. In contrast, during herbicide spray, herbicides may reach non-target plants that are at various phenological stages. Several studies demonstrated that plants may be at greater risk when contamination occurs at the reproductive stage. No data on long-term effects, plant recovery or on effects on reproductive stages are requested in current guidelines. Preliminary evidence suggests that this may be an important aspect to consider in risk assessment. In addition, herbicide impacts on plant community diversity as well as biodiversity at other trophic levels have been demonstrated in only a limited number of studies and therefore should warrant more attention in risk assessment.

Aquatic plants are known as absorbent plants and macrophytes species that happen in numerous sorts of living spaces. They are important in nutrient cycling, oxygen production, controlling water quality sediment

INTERNATIONAL CONGRESS OF HEALTH AND ENVIRONMENT

October 23-25, 2017

Adana-TURKEY

stabilization and providing habitat and shelter for aquatic life and wildlife. In addition, phytoplankton, benthic and epiphytic attached microalgae, macro algae and macrophytes are the main energy providers in order to sustain the survival of the most aquatic ecosystems. Drinking water quality, recreational and navigational use of the water body and the other biota are affected by changes in the community dynamics of aquatic plants.

Aquatic ecosystems are debilitated by diffuse, ceaseless, and various contaminations that impact life forms' working and unfavourably influence environment wellbeing and security. Living beings are persistently presented to various blends of contaminations made out of different compound structures, metabolites, and buildings that regularly are available at low focuses. Heavy metals have received particular attention in toxicity studies because of their adverse impact on organisms.

There are two general mechanisms associated with the separation of dissolved metals from water using aquatic plant biomass. The first is a fast metabolism independent surface reaction; the second is a slow metabolism dependent cellular uptake. The first process has been modelled as a diffusion process that ends when the soluble metal ions bind or absorb to the outer cell wall of the biomass. The second process has been modelled as a mass transfer process from the outer cell wall to the cell or cell wall interior. This first step can separate significant amounts of metal within minutes, whereas the second step may take hours or days.

Duckweed is a small, fragile, free-floating aquatic plant that flourishes in quiescent, shallow water bodies and also, mostly previous investigation to a group of floating, flowering plants of the family as Lemnaceae. Duckweed plants are growing fatly and it is widely distributed. The special features of duckweed plants make them used as a test organism for wastewater treatment and aquatic studies (John et al., 2008). Constructed wetlands/phytoremediation claim to be low-cost, low-technology system able to treat a variety of wastewaters, they are usable to culture and then tested. Different investigations prefer duckweed plant species which are more tolerant to environmental pollution. On the other hand, some studies indicate the sensitivity of duckweed plants against toxicity are similar with the other species in the aquatic environment. The usage of duckweed plants in the complex effluent bioassays and the usage of them as testing plant for herbicide pollution in the aquatic environment, lake and river pollution, sediment toxicity are acceptable. There is huge difference between duckweed and algae plants in the content of complexity. These two species complete each other during the phytotoxicity test instead of excluding each other mutually (APHA, 1992, Rahmani & Sternberg, 1999, Wang, 1990).

Lepidium sativum and *Lemna minor* species were used in most of the studies as experiment plants. Both of them gave reaction against the chromium addition. Heavy metals are the most dangerous carcinogenic metal found in rocks, animals, plants, and soil in different forms. Metal coating industry wastewaters include chromium metal mostly. The amount of chromium in the wastewater is very important to understand its negative effects on both animal and human life. With the help of this study, the concentrations which are dangerous for some plants were investigated and their relationships with each other were understood. Chromium addition to the wastewaters with high concentrations may create negative effects on the plant growth and survival rate of some species may be decreased. Therefore, wastewaters of metal coating industry should be analysed carefully and chromium pollution should be removed before discharging the water bodies.

INTERNATIONAL CONGRESS OF HEALTH AND ENVIRONMENT

October 23-25, 2017

Adana-TURKEY

IS-20 RENEWABLE ENERGY SOURCES AND HYDROGEN ENERGY

Prof. Dr. Gulfeza KARDAS

Energy is the most important import to the economic development. Most of the energy demand is met by fossil fuels. Their reserves are limited and have harmful effects on environment. The world needs the sustainable and renewable energy resources to replace the fossil fuels which have negative effects. There are many environmentally friendly energy sources that can be found in various forms such as solar energy, wind energy, hydrothermal, biomass, etc. All of them can be described as renewable whereby they are not exhausting any resource to produce the energy. However, renewable energy sources are often limited for commercial use due to their discontinuous availability such as the wind doesn't blow every time or the sun shines only during the daytime. The hydrogen is the best solution to the storage of the renewable energy and can be used as a mobile source of power for transportation similar to natural gas. It is an energy carrier, not an energy source. Hydrogen can be produced by using a number of different clean processes¹. These include renewable resources, such as biomass and water with input from renewable energy sources (e.g. sunlight, wind, wave or hydro-power). A variety of process technologies can be used, chemical, biological, electrolytic, photolytic and thermo-chemical. Each technology is in a different stage of development, and each offers unique opportunities, benefits and challenges. Water electrolysis is the most flexible and tenable solution to produce hydrogen². Electrolysis opens the door to producing hydrogen from any energy source capable of generating electricity. The electricity should be produced from environmentally friendly renewable sources for an ideal hydrogen economy in future. It is hope that the hydrogen will be produced cheaply from renewable sources to meet world energy demand.

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INTERNATIONAL CONGRESS OF HEALTH AND ENVIRONMENT

October 23-25, 2017

Adana-TURKEY

IS-21 HEALTH EFFECTS OF AIR POLLUTION

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Air pollution problem makes an important public health concern worldwide. Although developed world (i.e. Western European and Northern American Countries) improved air quality in their countries, developing countries still have serious air pollution problems. Turkey managed to decrease level of air pollutants, to some extent, in some metropolises and relatively small cities by implementing natural gas for domestic use. However, with increased number of vehicles in the traffic, densely populated city centres, and increased combustion of fossil fuel by power plants, air pollution has remained as a serious health issue. The major air pollutants include particulate matter with different size (0.1-10 μ m, PM_{0.1-10}), ozone (O₃), sulphur dioxide (SO₂) and oxides of nitrogen (NO_x), which are present both outdoor and indoor. A specific type of indoor air pollution is biomass smoke pollution, which is a serious health concern, in particular in the rural sites of Asia, Africa, South America and some territories in the Middle East including Turkey. Epidemiological studies demonstrated a close association between increases in levels of air pollution and mortality and morbidity. World Health Organization (WHO) announced that about 7 million people prematurely die worldwide annually due to air pollution. According to WHO, increased air pollutants were associated with increases in death due to stroke, ischaemic heart disease, chronic obstructive pulmonary disease (COPD), acute lower respiratory disease (ALRD), and lung cancers. Multi-centre studies in North America and Western European countries reported that an increase in the levels of PM, O₃, NO_x and SO₂ leads to increases in prevalence, emergency room visits and hospitalization due to chronic respiratory diseases including asthma and COPD. More recently, WHO announced air pollution as group 1 carcinogen. Studies from different provinces in Turkey reported similar findings. Recently, we demonstrated that increased levels of PM₁₀ and desert dust are associated with increases in mortality, emergency room visits and hospitalization due to asthma, COPD, lower respiratory tract infections (LRTI) and pulmonary emboli in Gaziantep, South East Turkey. Studies investigating mechanisms underlying health effects of air pollutants demonstrated that air pollutants can cause oxidative stress at cellular level that could lead to increased inflammation and changes in cell cycle and death. We found that air pollutants decrease ciliary activity of air way epithelial cells, while inducing permeability and inflammatory activity. Interestingly, cells from patients with asthma or COPD were more susceptible to deleterious effects of air pollutants. Furthermore, pollutants induced cell proliferation and modulated expression of cell cycle and apoptosis-related proteins that play key roles in carcinogenesis. In conclusion, air pollution has serious impact on human morbidity and mortality worldwide, in particular in developing countries.

INTERNATIONAL CONGRESS OF HEALTH AND ENVIRONMENT

October 23-25, 2017

Adana-TURKEY

IS-22 MIKROBIYOTA, HEALTH AND DISEASE

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There are millions of microbes in our body and their numbers are higher than body cells. Simply, microbiome is defined as the community of microbes in the body. Human microbiome is highly complex, there are many functions and some of them are:

- It has important role in immune development,
- The correlations between microbiota and antibiotics and also in the development of immune-mediated diseases are important,
- Correction of health related conditions, the use of antibiotic and immunizations may cause shift in microbiota,
- Microbial populations may change according to geographic locations,
- Microbiome may determine the human brain and behaviour
- There are some differences according to the body weight and body mass index and diet may change microbiota

There are many ongoing microbiota studies and most of them are related with infections. The most commonly designed studies are about bacterial vaginosis, pre-term baby infant pneumonia infections, urinary tract infections, nasopharyngeal and skin microbiome, acne, psoriasis, oral diseases-periodontitis, malaria, rotaviral infections, chronic wound microbiome. Additionally there are many studies about type I diabetes mellitus, spinal cord injuries, astronaut microbiome, animal models for stress and alcoholism and various cancers.

Essential definitions are below:

Eubiosis: Microbial composition similar to healthy individuals

Dysbiosis: A state of microbial composition characterized by an unbalanced proportion of bacteria compared with healthy state

Metagenome: Collection of genomes from members of specific microbiota

It has been looked for the role of microbiota in inflammation, carcinogenesis and in the treatment of cancer in many studies and there are various ongoing studies. Microbial imbalance has critical role in the development of many diseases and there is considerable increase about the microbiota in cancer, auto-immune disease and conditions increasing the risk of infections.

INTERNATIONAL CONGRESS OF HEALTH AND ENVIRONMENT

October 23-25, 2017

Adana-TURKEY

The changes in microbiota as a mediator in cancer progression and treatment can be summarized as: Complicated and mixed circuits can mediate proliferation, life, growth and some other changes. Genetic and epigenetic events in this network may cause aberrant cellular behaviours which are the essential for carcinogenesis.

Some of the diseases shown the association between microbe and cancer are Papillomavirus-cervical cancer, Hepatitis B and C viruses and hepatocellular cancer, Epstein Barr virus –lymphomas and nasopharyngeal cancer, Herpes virus 8 – Kaposi sarcoma, human T lymphotropic virus type 1 – Leukemia and Helicobacter pylori and gastric cancer and lymphoma.

INTERNATIONAL CONGRESS OF HEALTH AND ENVIRONMENT

October 23-25, 2017

Adana-TURKEY

IS-23 MEDICAL WASTE

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Medical waste refers to infectious waste, pathological waste and cutting waste generated by healthcare facilities, research institutes and laboratories. In addition, wastes from small or scattered sources such as those generated during home medical care (dialysis, insulin injections, wound care, etc.) but from sources are also medical waste.

The medical wastes generated by the health care cause from hospitals are of different quality. Of them 75-80% are covered by domestic waste. So they do not present danger. However, of them about 20-25% are infectious, hazardous, toxic and radioactive wastes.

The hazards caused by medical wastes occur in one or more ways: a) pathogens causing the infection, b) contents that may cause changes in the hereditary structure (DNA), c) toxic / hazardous chemical / pharmaceutical substances, d) radioactivity properties. E) cutting-drilling injuries lead.

Medical wastes can be dangerous to the general public as well as dangerous for health workers and patients. Also, it should not be forgotten, especially the damage caused by chemical substances to the ecosystem.

The amount of waste is rapidly increasing every day according awareness of the health institutions. The amount of medical wastes per capita is observed in hospitals with the most high-income countries (1-12 kg / person / year vs. 0,5-6 kg / person / year), university hospitals, proportional to the number of beds the amount is increasing significantly. For this reason, necessary precautions must be taken and supervised in order to eliminate the risks.

The principles that the World Health Organization recommends for consideration in the preparation and implementation of waste management plans associated with health services are: 1) Prevention / reduction, 2) separation / decomposition, 3) packaging and labeling, 4) transport and storage, 5) recycling and 6) disposal.

The studies related to waste control in our country have been regulated for the first time in 1983 by the Ministry of Environment "Environmental Law" No. 2872 and "Medical Waste Control Regulation" published in the Official Gazette No. 21586 in 1993. With this regulation, the task of destroying medical waste is financed by municipalities; the waste disposal organizations and the responsibility for supervision are given to the Ministry of Environment. This regulation has been renewed in different processes until today.

Accordingly, health institutions are obliged to establish and follow up waste management. In the institutions, waste management, collection reduction in source of waste, transport, temporary storage, control after waste disposal and recycling, etc. is a form of structuring involving transactions.

INTERNATIONAL CONGRESS OF HEALTH AND ENVIRONMENT

October 23-25, 2017

Adana-TURKEY

IS-24 SCIENCE SHOPS ECOSYSTEM IN EUROPE

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A science shop is a university- or non-university based entity that performs or facilitates research and knowledge transfer with and for society. It is a model of community-based research that aims to establish productive, mutually beneficial collaborations between community organisations and institutions that are doing research. Community-based research (CBR) is a collaborative process that could be defined as "a partnership of students, faculty, and community members who collaboratively engage in research with the purpose of solving a pressing community problem or effecting social change" (Strand et al., 2004)¹. Under CBR the community engagement ensures the transfer of the research results to community.

Initially, the science shops provided a specific location at universities where citizens and community groups could express their questions directly to researchers. In this way, universities were supporting researchers to solve community-related problems. In this context, the results of science shops activities are made available to the community.

The science shops represent a demand-driven and bottom-up approach to research. They develop different types of activities like:

- giving direct answers to the received questions when data is available,
- establishing research projects carried out by students under coordination of the faculty research staff,
- organising events for knowledge transfer to civil society.

It is considered that universities are offering the advantage of resource stability: faculty, facilities, students engaged in research.

The research program *H2020 SwafS-01-2016: Participatory research and innovation via Science Shops*, is funding the integration of society in science and innovation issues. It invests in policies and activities in order to integrate citizens' interests and values and to increase the quality, relevance, social acceptability and sustainability of research and innovation outcomes in various fields of activity from social innovation to areas such as biotechnology and nanotechnology (Cordis, H2020-EU.5.c.)².

Under this program the *SciShops* project – “*Enhancing the Responsible and Sustainable Expansion of the Science Shops Ecosystem in Europe*”³ started in September 2017. It receives funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 741657. The project will take place over two and a half years and gathers 18 partners from 13 countries.

The aim is to expand the number of science shops in Europe to promote the integration of society in science and innovation through science shops, relying on cooperation between all research partners. It will have a reactive approach as well as a proactive one: raising awareness about the role of science shops, encouraging their connections with communities and the links with local civil society organisations (CSOs) like environmental

INTERNATIONAL CONGRESS OF HEALTH AND ENVIRONMENT

October 23-25, 2017

Adana-TURKEY

organisations, sport organisations, organisations for disabled people, for patients or for women, sport organisations, consumer or resident associations, etc.⁴

The project *SciShops* will gather community-based participatory research case studies and best practices as well as responsible research and innovation initiatives (RRI). It will identify and engage relevant community and research stakeholders. A strategy for community-based research and knowledge transfer from science shops will be elaborated. One of the novelty that will be brought up by *SciShops* project is that it will gather together three different types of organisation partners that will start new science shops: universities, research institutes and non-governmental organisations (NGOs). Summer schools, knowledge cafes, training sessions will be organised for students and trainers from different geographical areas.

SciShops consortium has as a top priority to prove the benefits of starting a science shop for every type of organisation as well as the advantages the civil society gains from collaboration with science shops in community-based participatory research. The results will be disseminated in participatory knowledge transfer and exchange events.

SciShops project will consider the science shops around Europe as components of an ecosystem. The Science Shops “Ecosystem” (SSE) has a structure similar to a natural ecosystem as a base unit that supports life. The components are in specific relations with the environment and between themselves. SSE could be considered as a complex of entities (universities and research units) collaborating in the process of knowledge transfer to stakeholders, also entities of SSE. They are in a relation of producing, transferring, receiving and “consuming” knowledge, in what we can call the “knowledge chain”, as knowledge producers and knowledge consumers. The entities/components of SSE are diverse and interact, similar with living organisms, in different ways. The interactions ma

The most often relations are of symbiotic type: the SSE components will interact in a mutually beneficial way (*mutualism*) or one component will benefit while the other component is not harmed (*commensalism*).

Neutrality describes the relation between two entities (Science Shop) that interact but do not affect each other and can exist frequently, for example, between science shops that are not part of a network or have different fields of interest.

Competition, as an interaction between SSE components, in which the strength of one could be lowered by the presence of another, is met, for example, during funding programs. It could affect the structure of the SSE community.

The SSE components have different *life span* lengths and are characterised by *productivity*, sometimes as a measure of their success. This depends strongly on the attracted funds.

One of the most important characteristic of SSE is *communication* of the research results and knowledge in the knowledge chain. On one hand, this relates to communication between stakeholders and Science Shops. On the other hand, the communication of the research results is a very important step. The results have to be communicated in a scientific manner in scientific publications, but at the same time they have to be made available to the public in an open way.

INTERNATIONAL CONGRESS OF HEALTH AND ENVIRONMENT

October 23-25, 2017

Adana-TURKEY

There is no doubt than inside science shops networks, communication is vital in changing ideas, results, and case studies in addition to participation to joint events.

Due to the diversity and scope of questions received from CSO, the science shops could have difficulties in satisfying demand. Therefore, they would gain from cooperation, with the aid of the Commission, in pooling their resources, their work, and their experience. The European Commission has funded a number of projects for taking stock of the results of science shops. Because of their combination of local and European elements, the Commission placed the science shops on its agenda since 2001 in the framework of its *Science and Society Action Plan* (European Commission, 2001), encouraging them to collaborate with each other.⁵

Collaboration inside the large European community of science shops is continuously encouraged by the European Commission. The 5th Framework Program (FP) of Science and Society Action Plan was continued with the programs *Science and Society* (FP6), *Science in Society* (FP7), and currently under *Science with and for Society* (Horizon 2020).

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INTERNATIONAL CONGRESS OF HEALTH AND ENVIRONMENT

October 23-25, 2017

Adana-TURKEY

IS-25 BIOGAS POTENTIAL OF EREGLI CITY

Assist. Prof. Dr. Fatma Didem TUNCEZ

KTO Karatay University, KONYA

Turkey's growth and development goals mean that its energy need will increase rapidly in proportion to its growth. Meeting the increasing energy need from fossil fuels such as coal, oil and natural gas causes the depletion of natural resources. Another problem is that the increase in energy demand is increasingly met with imports. The solution of this problem is to diversify the energy supply with renewable energy sources. Biogas is one of the renewable energy sources. Biogas potential of Eregli District was revealed in this study.

INTERNATIONAL CONGRESS OF HEALTH AND ENVIRONMENT

October 23-25, 2017

Adana-TURKEY

IS-26 ENVIRONMENTAL IMPACTS OF REFRIGERANTS AND THE NEXT GENERATION REFRIGERANT R-32

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Mechanical Engineer MSc BREEAM Yetkili Uzman / Green Energy & Environment Section Coordinator

There is no refrigerant which can meet the needs of every kind of application. This means that when making a decision it is important to take into account not only the GWP or amount of refrigerant used, but also aspects such as energy efficiency, safety and affordability.

Latest developments proven that R-32, which has a low global warming impact, is the most suitable next generation refrigerant for residential and commercial air conditioners. Compared to the commonly used refrigerant R-410A, the Global Warming Potential of R-32 is only one third (GWP: 675), while it allows for a smaller refrigerant volume and higher energy efficiency.

In this presentation, first, R-32 refrigerant properties and aspects of using R-32 in air conditioners & heat pumps are explained. Afterwards, the revised EU F-Gas Regulation, its connection to R-32 and the effects of this regulation on the future of the air conditioning sector is introduced in detail. Finally, the latest developments about the use of R-32 around the world is investigated and the current data is shared.

Keywords: R-32, Low GWP, F-Gas Regulation, Refrigerant.

INTERNATIONAL CONGRESS OF HEALTH AND ENVIRONMENT

October 23-25, 2017

Adana-TURKEY

IS-27 RE-EMERGING ENVIRONMENTAL HEALTH TREAT: NONTUBERCULOUS MYCOBACTERIA

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Nontuberculous mycobacteria (NTM) cause serious infections especially in immunosuppressed patients around the world by direct transmission from the environment or after colonization. They can form biofilms and survive in the environmental sources such as water and soil. In recent years, increased incidence of immunosuppressing diseases such as Acquired Immunodeficiency Syndrome (AIDS) have further increased the prevalence and importance of NTM infections. Of the more than 150 NTM species reported in the literature, at least 25 species have been strongly associated with NTM diseases in humans, the remainder are environmental organisms rarely encountered in clinical samples.

The most common clinical manifestation is chronic pulmonary infection. Similar to *Mycobacterium tuberculosis* (MTB) pulmonary infection, its major symptoms are progressive lassitude, chronic cough, hemoptysis, weight loss and fever. Challenges in distinguishing of NTM infections from tuberculosis may lead false diagnosis and treatments. Mostly, patients suffer from recurrent infections or reinfections. Furthermore, co-infections with tuberculosis make the diagnosis and prognosis of NTM infections more complicated, and differentiation between contamination, infection and disease remains challenging. Risk factors for NTM diseases are not well understood and preventive therapies are lacking as well. Treatment of NTM pulmonary disease is arduous, lengthy and costly. Furthermore, a lot of NTM strains have anti-tuberculosis drug resistance.

The culturing and phenotypic identification to the species level of NTM is complex and time consuming. Therefore, nowadays molecular methods such as reverse hybridization, PCR-RFLP and DNA sequence analysis have gained importance. However, reasons such as identification of novel species and subspecies and great similarity of genetic structures within mycobacteria highly limit molecular diagnosis as well. Recent studies have exhibited that sequence analysis of well protected gene regions such as *hsp65* and *16S rRNA* is more sensitive than phenotypic tests for the species identification. The *hsp65* gene, which is present in all mycobacteria, is more variable than the *16S rRNA* gene and is therefore potentially useful for the identification of genetically related species.

Epidemiological studies investigating clinical and environmental samples by using rapid and reliable molecular methods and detecting antimicrobial drug resistance of identified NTM isolates can monitor the distribution and movement of known NTM species in human population as well as their transmission routes, thus can provide an effective surveillance of NTM infections.

INTERNATIONAL CONGRESS OF HEALTH AND ENVIRONMENT

October 23-25, 2017

Adana-TURKEY

IS-28 MICROBIOLOGICAL CONTAMINATION IN DRINKING WATER AND WATER-RELATED DISEASES IN DEVELOPING REGIONS

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Inadequate drinking water supply and quality and poor sanitation are among the world's major causes of preventable morbidity and mortality. According to the World Health Organization (WHO) estimates, basic hygiene related diseases have a significant impact on human health. Diarrhea disease alone causes 2.2 million of the 3.4 million water-related deaths per year (1, 2, 3, 4, 5). The problem is not limited to developing countries. In member countries of the Organization for Economic Co-operation and Development (OECD), waterborne outbreaks occur all too frequently. There was an increasing level of public concern about water safety, fueled by concerns raised by outbreaks of disease and the recognition of new agents of disease and the challenges they presented to health protection. Waterborne caused by the ingestion of water contaminated by human or animal excreta or urine containing pathogenic bacteria or viruses; includes cholera, typhoid, amoebic and bacillary dysentery, and other diarrheal diseases. Water-based caused by parasites found in intermediate organisms living in water; includes dracunculiasis, schistosomiasis, and some other helminths. Water-related caused by microorganisms with life cycles associated with insects that live or breed in water; includes dengue fever, lymphatic filariasis, malaria, onchocerciasis, and yellow fever. Excreta-related caused by direct or indirect contact with pathogens associated with excreta and/or vectors breeding in excreta; includes trachoma and most waterborne diseases. Water collection and storage caused by contamination that occurs during or after collection, often because of poorly designed, open containers and improper hygiene and handling. Toxin-related caused by toxic bacteria, such as cyanobacteria, which are linked to eutrophication of surface-water bodies; causes gastrointestinal and hepatic illnesses. Diseases related to contamination of drinking-water constitute a major burden on public health(7, 8, 9, 10).

INTRODUCTION

Waterborne disease is not restricted to developing countries. Clearly, in countries where a large part of the population does not have access to safe drinking water, a substantial number of these infections will be waterborne, indeed, Hunter (1997) estimated that waterborne disease might account for one-third of the intestinal infections world-wide. The microbiological quality of drinking water is a concern to consumers, water suppliers, regulators and Public health authorities. The potential of drinking water to transport microbial pathogens to great numbers of people, causing subsequent illness, is well documented in countries at all levels of economic development. It was estimated that about 400 000 individuals suffered from gastrointestinal symptoms due, in a large proportion of cases, to *Cryptosporidium*, a protozoan parasite, although subsequent reports suggest that this

INTERNATIONAL CONGRESS OF HEALTH AND ENVIRONMENT

October 23-25, 2017

Adana-TURKEY

may be a significant overestimation. A significant proportion of waterborne illness is likely to go undetected by the communicable disease surveillance and reporting systems. Several researchers have attempted to estimate the total burden of waterborne disease world-wide. WHO publishes widely recognized Guidelines for Drinking water Quality (GDWQ) that includes criteria for assessing health risks and setting targets for improving water safety.

INTERNATIONAL CONGRESS OF HEALTH AND ENVIRONMENT

October 23-25, 2017

Adana-TURKEY

IS-29 NOISE CONTROL AT WORK

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Middle East Technical University

Control of occupational noise in industry is discussed in this presentation. Techniques of noise control will be reviewed in terms of concepts and their applications in practice. Practical issues are addressed as well. Engineering aspects of noise control approaches are presented. A conclusive summary is also provided.

INTERNATIONAL CONGRESS OF HEALTH AND ENVIRONMENT

October 23-25, 2017

Adana-TURKEY

IS-30 FORENSIC TOXICOLOGICAL APPROACH TO ENVIRONMENTAL POLLUTION IN TURKEY

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Cukurova University Institute of Addiction and Forensic Sciences

Cukurova Region is a region where intensive agriculture is carried out and most of the agricultural chemicals consumed in our country are used in this region. Depending on the use of these pesticides in our region, acute and chronic poisonings occur. Regarding with acute poisonings, 4199 autopsy cases were analyzed in the forensic toxicology laboratory with the request of pesticide analysis and positive pesticides were detected in 72 cases in the retrospective study we conducted between 2006 and 2008 at the Adana Forensic Medicine Institute. Among these pesticides, the most abundant is endosulfan with 47.2% and followed by dichlorvos. Since then, restrictions have been placed on the sale of endosulfan .

Although organochlorine compounds are restricted and prohibited by law, they are still an important environmental pollutant for our country due to the bioconcentration factor. Organochlorine pollutants accumulate in different biological specimens; Blood, Adipose tissue, Breastmilk, Hair and Meconium. Biological monitoring, defined as the detection of quantities of environmental pollutants in body tissues and fluid, is in use to identify residues in people who lives in various regions in the majority of developed countries. Considering the bioconcentration phenomenon; the necessity of biological monitoring is revealed since the environmental pollution caused by these pollutants is determined and analysis of environmental samples such as water and soil cannot be satisfied.

There are many studies in the literature on the biological monitoring of pesticides and their metabolites in the general population and occupational exposures. The work we do is very important to show the pollution in our region. These pollutants need to be biologically monitored during general and occupational exposures to produce necessary data.

INTERNATIONAL CONGRESS OF HEALTH AND ENVIRONMENT

October 23-25, 2017

Adana-TURKEY

IS-31 BIOLOGICAL AND CHEMICAL WARFARE INJURIES

Prof. Dr. Caglar OZDEMIR

Erciyes University Faculty of Medicine, Department of Forensic Medicine

Exposure to disasters or warfare is frightening to most persons. However, fear is even more likely when biological and chemical agents are involved. Biological and chemical (BC) weapons have been described as the “poor man’s atom bomb”.

Hazardous materials of BC origin have been used as weapons and for homicide since prehistoric times. Their use in warfare has been reported since ancient Greek and Roman times, even if their impact had been comparatively limited due to the restricted knowledge at that time.

BC weapons are a broad category of weapons characterized by their capacity to affect humans, animals and plants through their toxic or infectious properties respectively.

BC warfare agents share many characteristics in common, including intent of use, some dispersion methods, and initial defense based on adequate personal protective equipment and decontamination.

BC warfare agents are intended for use in military operations in order to kill, seriously injure or incapacitate exposed individuals by exerting their physiological effects; and also appealing to terrorist groups because the impact in terms of death, disability, economic losses, and panic remains high.

Careful advance planning is essential for countries to manage the threat or the consequences of deliberate releases of biological or chemical agents.

INTERNATIONAL CONGRESS OF HEALTH AND ENVIRONMENT

October 23-25, 2017

Adana-TURKEY

IS- 32 NOISE AND HEALTHY HEARING

Assoc. Prof. Dr. Didem TURKYIMAZ

Hacettepe University, Faculty of Health Science

Noise is one of the most common harmful entity in the environment. Noise could be described as harmful sound to the human. It has been shown that sounds over 75 dB(A) cause damage particularly in hearing system and also rest of the human body. While long-term exposures to noise over 75/85 dB(A) is associated with gradual increase in hearing thresholds. Noise induced hearing loss is a permanent hearing impairment resulting from prolonged exposure to high levels of noise (noise-induced hearing loss, NIHL). Noise can also cause a reversible hearing loss, called a temporary threshold shift. This typically occurs in individuals who are exposed to gunfire or firecrackers, and hear ringing in their ears after the event. NIHL is almost entirely preventable. Although hearing normally declines with age, the average, healthy, non-noise-exposed person can have essentially normal hearing at least up to age 60. Individuals vary in their susceptibility to hearing loss. While research has shown some trends, there currently is no reliable way to identify which particular individuals may be most susceptible to NIHL. To protect themselves when exposed to hazardous noise, everyone should take some precautions.

INTERNATIONAL CONGRESS OF HEALTH AND ENVIRONMENT

October 23-25, 2017

Adana-TURKEY

IS-33 UNIVERSAL DESIGN FOR ACCESSIBLE HEALTH AND ENVIRONMENT FOR ALL

Prof. Dr. Resa AYDIN

Istanbul University (IU) Disability Applied Research Center

IU Institute of Social Sciences, Department of Disability Studies

IU Istanbul Faculty of Medicine, Department of Physical Medicine and Rehabilitation

Disability is an experience we can encounter at some point in life. Impairments of body structures or functions arising from congenital or acquired diseases, injuries or disorders can cause disability. According to the World Health Organization, around 15% of the world's population experience disability. 110-190 million people in the world have severe difficulties in activities of daily living(1). According to the latest updated data in Turkey, disability rate is reported as 6.9% meaning that around 5 million people live with some kind of disability in Turkey(2).

Disability rates increases with aging of the population and increase of chronic diseases. Traffic accidents, wars or disasters also increase the disability rate. The need for health care for some disability groups may be more than the rest of the population. United Nations (UN) Convention on the Rights of Persons with Disabilities mandates to take all appropriate measures to ensure access to the highest standards of health care without discrimination on the basis of disability(3).

In a survey conducted in 2010, 77% of the people with disability living in Turkey reported that they need better health care services. In the same study;

66.9% of persons with disabilities reported sidewalks, pedestrian paths and pedestrian crossings; 66.3 % reported that the buildings they live in; 58.4 % stated that public buildings were not accessible for them(4). In another survey, 72.6% of the disabled individuals stated that they were discriminated in the health field (5).

'Accessibility' means that individuals can fully exercise their fundamental rights in accessing physical and social environment, services, information and communication for independent living. The concept of 'accessibility', among the basic principles of disability rights, is broader and more comprehensive than the concept of 'transportability'. In Turkish, the term 'accessibility' sometimes translated as 'transportability' which means 'the capability to be moved from one place to another via any means such as vehicles or transportation systems'. The concept of 'accessibility' in Turkey is not yet fully and comprehensively addressed (6).

INTERNATIONAL CONGRESS OF HEALTH AND ENVIRONMENT

October 23-25, 2017

Adana-TURKEY

'Accessibility' in the ninth article of the UN Convention on the Rights of Persons with Disabilities; is stated as "access to information and communication facilities, including the physical environment, transportation, information and communication technologies and systems, and access to publicly available facilities and services in both rural and urban areas "(3). The Convention has brought the concept of 'reasonable accomodation' and 'universal design' into law as well as the term 'special measures' used to equalize the opportunities of people with disabilities in previous international agreements (7). 'Universal design' refers to designing of products, environments, programmes and services suitable for everyone's use. 'Reasonable accomodation' refers to the necessary modifications to ensure to persons with disabilities to actively participate in all aspects of life wherever universal design is not available (7).

People of all ages, elderly people, and children with health problems may suffer temporary or permanent difficulty in access(6). The adoption of 'universal design' principles, which means that 'products, environments, programmes and services are designed to be useable by all people' is the key of 'accessible health and environment for all'. In this presentation, universal design principles and successful examples will be shared.

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INTERNATIONAL CONGRESS OF HEALTH AND ENVIRONMENT

October 23-25, 2017

Adana-TURKEY

**IS-34 ENVIRONMENT AND HEALTH MISSION OF DUZCE UNIVERSITY IN UNIVERSITIES'
REGIONAL DEVELOPMENT FOCUSED MISSION FRACTIONATION AND SPECIALIZING
PROJECT**

Assoc. Prof. Dr. Ertugrul KAYA, Assoc. Prof. Dr. Umit BUYUKSARI

Duzce University

Universities' Regional Development Focused Mission Fractionation and Specializing Project is conducted by Ministry of Development in cooperation with Higher Education Council of Turkey. The main aim of the project is to provide an integration and consolidation of universities and their regions via the universities' mission fractionation to a special area that they have potential.

Five universities have been selected as pilot universities for this project. Düzce University has been assigned as pilot university in both Environment and Health areas. Just after that, Düzce University met to regional actors for a series of discussions and analyses to determine the specialization topics by considering the strengths, weaknesses, opportunities, and threats of the region. After these studies, the specific areas of mission fractionation have been determined. For the Environment mission, Düzce University will contribute to regional development by industrial recycling of regional agricultural wastes. Düzce University will also contribute to regional development via traditional and complementary medicine applications for the Health mission.

This study gives a brief on aims and methods of Düzce University in scope of Universities' Regional Development Focused Mission Fractionation and Specializing Project with a strong emphasis on Environment and Health projects to be implemented to contribute regional and national development.

INTERNATIONAL CONGRESS OF HEALTH AND ENVIRONMENT

October 23-25, 2017

Adana-TURKEY

IS-35 ENVIRONMENT, FOOD AND HUMAN RELATIONS

Prof. Dr. Hasan FENERCIOGLU

Cukurova University

Foods are essential needs for all living organisms. All human beings should consume foods of various origins in order to provide energy and nutrients to their bodies, necessary for good health, functions and happiness.

All materials accepted as food should be safe, in other words, should not be detrimental to humans.

Either plant or animal origin foods are heavily under the effects of environment since the environment covers air, soil and water without which any micro/macro organisms cannot survive.

Environment, foods and human beings are in close relations with each other in quality and quantity; therefore close attentions should be paid to each other in order for survival of the safe environment, foods and human beings.

Changes in needs and life-style of humans greatly affect the environment because of the increasing needs for shelter, industrialization, migration from agricultural regions to large cities and all forcing changes in natural balances.

Nowadays more and more people are becoming pure consumers and searching more comfortable life at the expense of environmental pollutions.

Water is essential for life, in other words, no life exists without water. Therefore necessary actions should be taken to prevent/or decrease the water pollutions to the minimum levels for the sake of water organisms and human beings.

Soil is facing increasing threats in time since losses are real because of erosions and occupations; pollutions because of uncontrolled disposal of various wastes and use of chemical and fertilizers in agricultural productions. Climatic changes and global warming are also the results of improper use of natural sources which endanger the life of all living organisms.

Polluted environment yields unsafe conditions for plants, animals and human beings each of which is closely depends on others.

In this review, possible threats to the environment consequently to safe food supply and human health will be criticized and possible precautions will be evaluated.

As we all know sewage treatment plants produce tons of unhealthy treatment mud. This mud has a very bad odor and gas. This gas and odor is very dangerous for human, animals and environment. This mud is huge threat for municipalities and cities.

INTERNATIONAL CONGRESS OF HEALTH AND ENVIRONMENT

October 23-25, 2017

Adana-TURKEY

IS-36 PESTICIDES AND THEIR EFFECT ON ENVIRONMENT

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Pesticides are used to prevent crop losses due to insects, diseases, weeds etc. and therefore play an important role in plant production. However, pesticides may cause damage to non-target organisms if they are used incorrectly. Because of these properties, pesticides, persistence in the ground, mixing with ground water and surface waters etc. they are considered potentially toxic to the environment. Each pesticide group has different properties and toxicological effects. Depending on their chemical properties they can enter the organism, bioaccumulate in food chains and consequently influence also human health, domestic animals etc. In last decades, two solutions are mostly appearing in relation to pesticides: to ban pesticides that are most toxic to humans, as well as pesticides that remain for the longest time in the environment and to protect public health by setting maximum limits for pesticide residues in food and water. Pesticides harmful to the environment have been mostly banned from agricultural use in developed countries, but they are still used in many developing countries. Therefore in developing countries people who work in agricultural sector and also consumers have the greatest health risks from exposure to pesticides and from pesticide residues. In addition, pesticide residues in surface and underground waters are overlooked in developed countries. To protect the food consumers every countries should develop internationally-accepted maximum residue limits.

Keywords: Pesticide; food residue; maximum residue limit

INTERNATIONAL CONGRESS OF HEALTH AND ENVIRONMENT

October 23-25, 2017

Adana-TURKEY

IS-37 KR SYSTEMS

Savas YUKSELYALCIN

SKYGATE COMPANY, Turkey Director

We, KR technologies has the latest and finest technology to solve this problem. KR technology systems clear all sewage mud from odor and gas. KR systems is the only one system that has world standarts. KR system dispels % 100 of gas and bad odor. KR systemis an very economical system that saves money to municipuls.

KR systems protects human health and environment

INTERNATIONAL CONGRESS OF HEALTH AND ENVIRONMENT

October 23-25, 2017

Adana-TURKEY

IS-38 ENVIRONMENTAL BIOETHICS

Prof. Dr. Nesrin COBANOGLU

Gazi University School of Medicine Chair, Medical Ethics and History Department

While ethics has been seeking answers to open ended questions for human - human relations by evaluations "good and bad", the responsibilities had taken on only to human. Not only sphere of human responsibility consist from bioethics concept covered living organisms as animals and plants but also by environmental ethics, it has been widened to relations with whole ecosystem included the components like air and water.

During the past, axiology used to evaluate dilemmas occurred in a limited space and period, the next generations and universe concepts currently become important as determiner by reflection of unlimited, fast and specious development. Environmental bioethics concept should also be related with social policies, environmental problems and bioethic notions.

INTERNATIONAL CONGRESS OF HEALTH AND ENVIRONMENT

October 23-25, 2017

Adana-TURKEY

IS-39 ENVIRONMENTAL LEGISLATION

Env. Eng. Gulin ERDAL

Adana Environment and Urban Planning Provincial Directorate-Environmental Management and Supervision
Branch Directorate

The protection of the environment and the problem of environmental pollution affect other states and people that exist not only in the country which is the source of pollution but also in the world. As a consequence, some interstate arrangements related to the environment are also necessary, and a number of intergovernmental workshops and meetings have been organized for the protection of the environment and for the prevention of environmental pollution. Environmental problems are affecting the whole world and therefore international solutions are needed.

International agreements, environmental judgments, and case law emerging as a result of these judgments are developments related to environmental law, which have a global dimension in the world and are related to industrial pollution, protection of the environment, sustainable use of natural resources. Developments in environmental law were first described in Article 56 of the 1982 Constitution: "Everyone has the right to live in a healthy and balanced environment. It is the responsibility of the State and its citizens to improve the environment, protect the environment and prevent environmental pollution." The inclusion of this provision and the right in the Constitution has made it necessary for the development and implementation of environmental legislation in terms of our country.

The First Environment Law was published on 28.08.1983 with 2872 numbers. Purpose of Environmental Legislation; is to protect the environment, which is the common existence of all living things, in line with the principles of sustainable environment and sustainable development.

INTERNATIONAL CONGRESS OF HEALTH AND ENVIRONMENT

October 23-25, 2017

Adana-TURKEY

ORAL PRESENTATIONS

OP-1 LIQUID CHROMATOGRAPHY MASS SPECTROMETER (LC-MS/MS) AND QUARTZ CRYSTAL MICROBALANCE SENSOR STUDY OF QUALITATIVE AND QUANTITATIVE OF PESTICIDE RESIDUES IN TOMATO AND WATER USING MOLECULAR IMPRINTING TECHNIQUE

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This study is aimed to be prepared of quartz crystal microbalance (QCM) sensors for determination of qualitative and quantitative of pirimicarb residues from tomato and water by using molecular imprinting technique. High selectivity, accuracy, sensitivity and lower detection limits of QCM sensors were carried out comparatively with LC-MS/MS.

Experimentally, N-metacryloyl-L-tryptophan methyl ester (MATrp), which was selected as a proper functional monomer to interact with a target molecule was characterized by FTIR-ATR. Pirimicarb imprinted poly(ethylenglycol dimethacrylate-N-methacryloyl-(L)-tryptophan methyl ester) nanofilm was attached to gold surfaces of QCM sensor. Furthermore, non-imprinted nanofilm was synthesized by the same method except without addition of pirimicarb. QCM sensor chips were characterized by atomic force microscope, ellipsometer, FTIR-ATR and contact angle measurements. Thickness measurements and atomic force microscope images show that almost all nanofilms are monolayered. The concentrations applied to the sensor were optimized in the range 10-1000 ng/L. Competitive adsorption experiments were performed to display selectivity of pesticide imprinted nanofilms and results show that imprinted nanofilm with a high selectivity and sensitivity for pirimicarb. The comprehensive method was prepared by LC-MS/MS for qualitative and quantitative analysis of the pirimicarb to perform validation. The limit of detection (LOD) was calculated 6.67 ng/L for QCM, 114.47 ng/L ($R^2=0.999$) for LC-MS/MS. Pirimicarb was detected 161.20 ± 2.06 ng/L for SPR sensor, 165.17 ± 1.79 ng/L for LC-MS/MS in tomato.

As a conclusion; the sensor chips were found to have high selectivity, accuracy, sensitivity and lower detection limits obtained from comparison experiments of molecular imprinted SPR sensors to determine pirimicarb in both tomato and water samples by LC-MS/MS.

Keywords: Molecular imprinting, quartz crystal microbalance, sensors, pesticide, LC-MS/MS.

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INTERNATIONAL CONGRESS OF HEALTH AND ENVIRONMENT

October 23-25, 2017

Adana-TURKEY

OP-2 AN INTEGRATED APPROCHE TO THE ENVIRONMENTAL HEALTH PROBLEMS:ONE HEALTH

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The environment and ecosystem health should be addressed in a holistic approach for protecting and developing of health. Human and animal health can not be considered independent of environmental health. All the negativity in the environment affects the health of all living things in the same ecosystem. Human and animal health is a result from the interaction of environmental and genetic characteristics. Environment is a whole with plants, animals, people, ground, air, agriculture, forest, water etc. The environmental problems, which have been occurred in this unity because of technological developments, natural and unnatural disasters in the world should be examined according to the concept of "One Health" not only present societies but also for protecting health of future societies. For this purpose, multidisciplinary approach to environmental problems is needed. Physicians, biologists, botanists, ecologists, microbiologists, medical practitioners, veterinary surgeons, agricultural engineers can be among the scientists who environmental scientists work with today. There is an urgent need in Turkey for these multidisciplinary studies which have many examples in the world.

Rapid population growth, over-urbanization and industrialization, which started in the late 20th century, also increased the use of limited natural resources, thereby contributing to a global dimension to environmental problems. As a result, the plant-animal-human health chain in the ecosystem has begun to deteriorate. The first effects of this degradation have been localized, and the heaviest secondary effects have systematically led to severe health problems at the global level with the accumulation of pollution. The American Medical Association (AMA) participated in the meeting of the American Veterinary Medical Association (AVMA) in Washington DC, June 2007, and these two organizations decided that the components of health should be dealt with by a multidisciplinary "One Health Initiative". Following its approval, the American Society of Tropical Medicine and Hygiene (ASTMH) has begun to work with the approval and joining of more than 300 prominent scientists, medical and veterinary doctors, noble prize winners, government leaders and members of the national science academy. Since 2007, *One Health* studies have been carried out at local and global levels in the world.

Keywords: Environment, Plant-Animal-Human Health, One Health

INTERNATIONAL CONGRESS OF HEALTH AND ENVIRONMENT

October 23-25, 2017

Adana-TURKEY

OP-3 THE COPULA APPLICATION ON DROUGHT RISK OF ADANA PROVINCE OF TURKEY

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Today, truth of the climate change triggers extreme nature events is accepted by many scientist as a serious event around the world. In this study, one of the disaster, namely drought generated by aforementioned extreme nature events, impacts on Adana province where located southern Turkey and which has advanced agricultural activities, was investigated. In this context, duration and severity parameters of drought belonging 1968-2016 years were determined by Standardized Precipitation Index (SPI) and Palmer Drought Severity Index (PDSI) methods. Subsequently, optimal distribution of drought duration and severity parameters which have meaningful relationship was determined among Exponential, Extreme Value, Gamma, Generalized Extreme Value (GEV), Logistic, Log-logistic, Log-normal, Normal and Weibull distributions by root mean square error (RMSE) method. Finally, joint distribution of drought's duration and severity parameters were obtained by maximum likelihood method with the aid of copula functions whose usage is being widespread and which involve property of marginal distributions. The most convenient copula function was chosen among Normal, t, Gumbel, Clayton, Frank, Joe ve Ali Mikhail Haq copulas by using Akaike Information Criterion (AIC) and Bayesian Information Criterion (BIC). Consequently, the most convenient marginal distributions to parameters of drought duration and severity according to SPI method were GEV and Weibull and according to PDSI method were Log-normal and Log-Logistic respectively. As for that the most convenient copula of SPI and PDSI methods were determined as Clayton and Frank respectively.

OP-4 EXPRESSION OF GENE WORKS ON DROUGHT-NO (NITRIC OXIDE) INTERACTION ON WHEAT (*Triticum aestivum* L.) SEEDLINGS AND ANTIOXIDANT ENZYMES ACTIVITY

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In this study, effect of drought and drought-NO (nitric oxide) interactions on three wheat seedlings (*Triticum aestivum* L. cv. Sultan, Yüreğir, İkizce) is studied. Length of shoot, wet and dry weight of shoot, chlorophyll a (chla) and b (chlb), total chlorophyll (chla+b) amount, proline and malondialdehyde (MDA) accumulation, also antioxidant enzyme activities (catalase (CAT), glutathione reductase (GR) and ascorbate peroxidase (APX) are analysed and as well as gene expressions which occurred in drought stress are determined by real-time polymerase chain reaction (RT-PCR) technique.

As a result, in all three types of seedlings, decreases in both length of shoot and wet weight of shoot are observed. Also, whereas in Sultan and İkizce types decrease in dry weight of shoot is observed, in Yüreğir types increase is observed.

When effect of drought types are analysed in detail, it is noticed that drought stress application triggered decrease in specific pigment amounts of shoots seeds (chla, chlb and chla+b), while drought-NO triggered increase. In all three types of seedlings, increase in antioxidant enzyme activities (CAT, GR and APX) associated with drought stress is detected. Moreover, increase of MDA and free proline accumulation in wheat seeds that are exposed to drought is detected.

Furthermore, in all three types of seedlings, increase of expressions of NAC and TaLTP1 genes is observed, even much more level in the most sensitive seed type, Sultan.

**OP-5 LAND SURFACE TEMPERATURE RETRIEVAL FROM LANDSAT 8 IMAGERY: A CASE
STUDY OF MINSK, BELARUS**

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Aim of the Study: Land Surface Temperature (LST) is one of the essential parameters in climate change, evapotranspiration, urban climate, vegetation monitoring and other thermal analyses. The main objective of this study was to retrieve LST for Minsk, Belarus using Landsat 8 imagery since it is the capital and the most populous city of Belarus.

Material and Methods: In this study, LST Calculator, a python tool developed by Oguz (2016) was employed. This tool was designed in python programming language to calculate LST from Landsat 8 imagery. LST Calculator uses the Radiative Transfer Equation (RTE) method to retrieve LST from Landsat 8 imagery. A Landsat 8 scene with path/row 184/22 acquired on May 31, 2016 was downloaded from the USGS webpage as an input to calculate LST.

Results: After inputting required bands into the LST Calculator, the final LST map is retrieved. The highest LST value was found to be 25 °C in the study area. The city center was found to be the hottest part due to the urbanization, Zaslavskaye Reservoir was found to be the coolest areas as expected with around 4 °C in the study area.

Acknowledgements: The author would like to thank the United States Geological Survey (USGS) for provision of the Landsat 8 data.

INTERNATIONAL CONGRESS OF HEALTH AND ENVIRONMENT

October 23-25, 2017

Adana-TURKEY

**OP-6 A COMPARISON OF THE APPROACHES REGARDING MEDICAL WASTE MANAGEMENT
OF SIIRT DISTRICT AND RELEVANT APPLICATIONS**

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In today's world development of urbanization and industry led to many problems. In less developed and still developing countries resources that are used unconsciously and over consumption is resulting as any sort of waste. These wastes both poison the nature and also negatively affect all kind of livings. One of these wastes is medical waste and it place health and development of all livings into danger. It is a known fact that medical workers are sacrificing for the sake of other people's health. However, if medical waste is not properly and cautiously managed both medical workers and those around them will be in danger. Medical waste is caused by hospitals, clinics, laboratories, blood banks, nursing home and pet hospitals.

Not all the waste produced by different units that are participating in the health service are always dangerous. Most of these wastes are related to paper and food based waste. However some of the medical wastes contain dangerous microbes. These may transmit through blood or blood products and also may spread disease since they are transmittable. Apart from these, injectors or other sharp appliances might cause transmission of the disease. In this study, collection, elimination, sterilization of such wastes and related regulations will be inspected and current situation will be compared to ideal situation with detailed analysis. For this study, related institutions will be contacted, after collecting necessary data literature review will be conducted and papers & symposium notes will be analysed, hence, through observation method a comparison will be conducted to finalize the study.

INTERNATIONAL CONGRESS OF HEALTH AND ENVIRONMENT

October 23-25, 2017

Adana-TURKEY

OP-7 A SUBJECT THAT NEGLECTED OF ENVIRONMENTAL EDUCATION “NOT BURYING DEAD ANIMALS”

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People need to learn that they have duties to animals that they have responsibilities, to protect their own health, to provide environmental safety and to advance on the path of civilization.

In these times, it is pleasure to see that humans have a more humane and more compassionate approach to animals. However, being kind to animals while animals are alive does not indicate that the association is fulfilled. If the duties and responsibilities that are required to be done when the animals are killed are not fulfilled, it is necessary for the people to be educated on the point that they can lead to environmental pollution and that public health can be dangerous.

Regarding the actions to be taken against the dead animals, unfortunately neither the institutions nor the persons are not educated or they do not care about this issue; This is an implicit environmental problem and a threat to public health.

Animals might die for a variety of reasons. These reasons may be; Infection, parasitic, viral and metabolic diseases, poisoning, traumatic events, hunting (continuous hunting), traffic accidents and disasters. In addition, euthanize to animals that aging, have chronic illnesses and have lost breeding status are among these reasons. Furthermore, animal deaths due to traffic accidents may be observed every day. These dead animals also remain on the road for days and other cars pass through the bodies of dead animals many times. The corpses of these animals that have died after the accident may lead to other accidents, as well as being kept in blood and dirt cause environmental pollution. +-

Local authorities should create a service line to take notice of the dead animals to prevent this bad situation. In addition to this, intervention teams should also be formed for the dead animals. These teams must place the dead animals they have been informed in body bags in accordance with the hygiene rules and wash the death site with antiseptic waters and corpses should be buried in animal cemetery soon.

All of these procedures should be followed by training programs for environmental cleanliness and health issues.

INTERNATIONAL CONGRESS OF HEALTH AND ENVIRONMENT

October 23-25, 2017

Adana-TURKEY

**OP-8 THE USAGE OF ARGUMENTATION BASED AND PROBLEM BASED LEARNING
APPROACHES INTENDED FOR DEVELOPING THE ENVIRONMENTAL COGNITIVE SKILLS OF
PRESERVICE SCIENCE TEACHERS**

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The purpose of this study is to investigate the effect of the usage of argumentation-based and problem based learning approaches in the development of environmental cognitive skills of pre-service science teachers. The research was designed in means of embedded design which is one of mixed research methods. Quantitative part of this study was based upon one group pretest-posttest design. On the other hand qualitative part of this study was based upon multiple holistic case study. The implementation of the study was carried out in the spring term of the educational year 2011-2012 at Gazi University Gazi Faculty of Education, Department of Science Education. Teaching applications were applied on all 34 students whereas the study was mainly carried out with six focus students consisting of three male and three female. The experimental study took 15 weeks (45 hours) in Environmental Science Course. The first week involved the acquaintance with the students and briefing them with the study. Also this week an educational plan related to the application of the argumentation was prepared and applied. And this week finally, scale was administered as pretest. The study was started in the second week. Last week scale was administered as posttest. The data of the study were gathered with different tools as semi structured interviews, researcher diaries, student diaries and environmental cognitive skills scale. In quantitative data analysis paired samples t-test was used. The quantitative data of the study were analyzed through SPSS 20.00 package program. For the qualitative data, descriptive analysis was used for data obtained throughout the implementation process. On the other hand, the program Nvivo-9 with categorical content analysis basis was used to analyze the data of semi-structured interviews obtained after the implementation process and the obtained findings were interpreted sticking to research question.

INTERNATIONAL CONGRESS OF HEALTH AND ENVIRONMENT

October 23-25, 2017

Adana-TURKEY

OP-9 ENVIRONMENTAL RISK PERCEPTION OF DENTISTRY STUDENTS

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Aim: Our research was conducted to identify the environmental factors which were considered as environmental risks and found to be hazardous by students of faculty of dentistry.

Method: The study included 167 students aged between 18 and 23 years who studied in Istanbul University, Faculty of Dentistry. The research was initiated in 2011 and was repeated in 2013. In our study, 56,9% of all students studying in the first year (100 students) and 36% of all students studying in the third year (67 students) were represented.

In our research, a questionnaire consisting of a total of 67 items aimed to determine environmental risk factors. Environmental risk factors were evaluated within a 5-point Likert-type scale. The results of the questionnaire were evaluated using SPSS 11.00 computer program. Non-parametric test was used to determine the differences between groups.

Result: According to the views of 167 students of faculty of dentistry about environmental risk factors and their severities, water shortage and problems (92,9% m=4,61 sd=0,71), nuclear wastes (90,1% m=4,56 sd=0,96), degradation of natural areas (89,2% m=4,31 sd=0,86), constituted the first 3 ranks by importance level.

The environmental factors which were considered to be have the “lowest risk” by the students included suntanning (25,7%, m=2,45 sd=1,31), using cellphones (12%, m=3,18 sd=1,31) and plastic bottle water (10,8% , m=3,28 sd=3,24).

When environmental risk perceptions were compared between the classes, it was found that the sensitivity of the students to environmental risk factors increased as the class level increased ($p < 0.05$). Sensitivities to environmental risk factors were found to be higher in female students compared to male students ($p < 0.05$).

Conclusion: Both theoretical classes and clinical studies should be supported by environmentally sensitive practices aiming to prevent environmental pollution in the educational programs in faculties of dentistry.

INTERNATIONAL CONGRESS OF HEALTH AND ENVIRONMENT

October 23-25, 2017

Adana-TURKEY

OP-10 ENVIRONMENTAL ENGINEERING EDUCATION IN TURKEY, PROBLEMS AND SOLUTION PROPOSALS

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The increase in population over the world, the increase of industrialists and technologists, the damage that people give to the environment increases day by day. Environmental engineering education is a department which was established in 1970 to educate 3 universities in Turkey in order to minimize or eliminate the harm that people give to the environment. In the 2012-2013 academic year, 40 public and private universities were included in the second education, 68 divisions were preferred and 3213 students were settled, in spite of in the 2016-2017 academic year, 45 public and private universities were included in the second education, 54 divisions were preferred and 1558 students were settled. As a result, the number of students in the last 5 years seems to be reduced by 50%.

In this study, general information about environmental engineering education will be given. The current status of environmental engineering education in our country will be investigated. In addition, the statistics of the last five years for Environmental Engineering will be examined and the current situation and the future in Turkey will be revealed. The number of departments of Environmental Engineering department has been researched each year and reasons for not being preferred. The problems of environmental engineering education in Turkey and the solution proposal will be discussed.

Keywords: Environmental Engineering, Environmental Education Problems, Solution Suggestions.

INTERNATIONAL CONGRESS OF HEALTH AND ENVIRONMENT

October 23-25, 2017

Adana-TURKEY

OP-11 EVALUATION OF THE IMPLEMENTATION OF THE "WHITE FLAG COOPERATION PROTOCOL" WAS DONE IN ANKARA BETWEEN THE YEARS 2013-2017

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Objective: Between the Ministry of Health and the Ministry of National Education the "White Flag Cooperation Protocol" was signed in 2006 and studies have been initiated in order to encourage education institutions in terms of hygiene, to protect and develop the health of the community, to raise the quality of life and to educate qualified and educated generations. In this study, it is aimed to evaluate the "White Flag Cooperation Protocol" implemented in Ankara between 2013-2017.

Materials and Methods: In this descriptive study, it was aimed to evaluate the studies carried out by the Provincial Public Health Directorate and Provincial National Education Directorate within the framework of "White Flag Cooperation Protocol" in Ankara between 2013-2017.

Results: The total number of schools applying for the "White Flag Cooperation Protocol" between 2013-2017 is 1457 and the number of schools receiving "White Flag" is 1106. As of the academic year, 2016-2017, 1106 (41.08%) schools have "White Flag Certificates".

Conclusion and Suggestions: The students are constitutes one over five of the populations in our country. Establishing health consciousness in school ages is an important step for educating healthy generations. For this reason, hygienic equipment and environmental conditions of schools are very important for the protection of basic health.

There is an increase in the number of schools that applied for the "White Flag Certificate" and received the "White Flag Certificate" in the 2016-2017 Academic Year.

In conclusion, with the increase in the application of "White Flag Certificate" in the schools of our city has improved the hygienic equipment and environmental conditions of the schools. Communication, cooperation, education and research activities are being carried out in the coming education and training year to increase the number of schools receiving "White Flag Certificate", to improve the hygienic equipment and environmental conditions of the schools.

INTERNATIONAL CONGRESS OF HEALTH AND ENVIRONMENT

October 23-25, 2017

Adana-TURKEY

OP-12 THE PLACE OF ENVIRONMENTAL HEALTH COURSES IN NURSING EDUCATION IN TURKEY

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Introduction: Rapidly growing environmental wastes and problems have put the world into a state which threatens life. In this case, the development of environmental awareness is important. The development of environmental awareness is possible only through education. Therefore, in every educational institution, including universities, especially in the curriculum of those that train health professionals there should be environment related courses. This research was conducted in order to determine whether there are courses related to environmental health in the course curricula of state universities / colleges giving nursing undergraduate education or not.

Material and Methods: Data was gathered through web sites of faculties / colleges and those not having curriculum information on their web sites were reached by telephone. This study seeks answers to; whether there are courses related to environmental health in the course curriculum, whether the courses are elective or mandatory, how many hours per week and in which classrooms.

Results: Study were conducted in a total of 93 university / college (39 health schools, 54 faculties) which provide nursing undergraduate. In the 16.1% of the universities, lessons were given in different names for environmental health (environmental health and nursing, environmental health, awareness of healthy environment, environmental health education, environment and health etc.). Courses are taught theoretically and given as 2 hours per week in all universities. 5 university offer the course in their first grade, 2 in their second grade, 4 in the 3rd grade and 4 university in their the final grade curriculum.

Discussion: When the data is analyzed, it is found that courses under the name of environmental health are found to be scarce in the curriculum of universities and vocational schools which provide nursing undergraduate education. It is necessary and important for all institutions providing nursing education to have courses for environmental health in their curriculum.

Keywords: Environmental Health, Nursing Education, Course Curriculum

INTERNATIONAL CONGRESS OF HEALTH AND ENVIRONMENT

October 23-25, 2017

Adana-TURKEY

OP-13 WASTE MANAGEMENT IN HEALTH INSTITUTIONS WITHIN THE SCOPE OF ENVIRONMENTAL LAW AND LEGISLATION

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The Environmental Law No.2872 is a very important law that has been issued in order to find solutions to environmental problems caused by population growth, urbanization and industrialization and to draw legal boundaries about the subject. The law has been updated according to changing and developing conditions and also supported by various regulations.

Due to increasing numbers of health institutions, developing technologies, developments in diagnosis and treatment practices, and amount of wastes from health institutions and their changing types are inevitable. Healthcare institutions are producing wastes of various kinds in large quantities and in large quantities with a high risk of infectious disease threatening the environment and human health. These problems will become more manageable with the development of management systems in accordance with the relevant laws and regulations of health institutions, preparation of waste management plans, supervision of health institutions and training of relevant personnel for the solution of management problems of domestic, medical, hazardous and radioactive wastes in health institutions. The applications of administrative, financial and penal sanctions will ensure that waste management in health institutions is carried out properly if when the relevant laws and regulations are not complied with within the scope of the legislation. The establishment of the environmental management units in the health facilities, the enlistment of the environmental officer or the provision of the environmental consultancy service will be a great contribution to the resolution of the legal responsibilities of the health institutions in fulfilling their legal responsibilities.

In this study, the legislation that health institutions are responsible for compliance with the waste management of the environment under the Environmental Law will be mentioned.

INTERNATIONAL CONGRESS OF HEALTH AND ENVIRONMENT

October 23-25, 2017

Adana-TURKEY

OP-14 OVERPOPULATION AND HAZARDS OF PET ANIMALS (CATS AND DOGS)

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In our country, feeding rates of cats and dogs in homes are increasing in recent years. It should be kept in mind that owning limited information about population control by owner, excessive numbers of animals leaving the streets, etc., there may be hazards and undesirable effects that may be caused by environmental and human health. The present study is aimed to investigate the hazards of pet animals and to reveal its importance.

In the study, overpopulation in pet animals and the related hazards were examined and evaluated using literature published from 1980 to 2017. As a result of the rapid urbanization process with increasing environmental problems, the number of stray animals is rapidly increasing, losing its natural habitat. Some of the hazards posed by them;

- Threaten, bite, injure and kill people, especially children.
- Zoonotic diseases.
- Causing accidents on the roads.
- The risk of stray cats and dogs infecting livestock and wildlife.
- Killing wildlife and compete with endemic species.
- Polluting the environment.
- Barking noise.
- Destroying goods and property (eg vegetable gardens).
- Creating danger by entering the airplane landing field.

Two cats at reproductive age, with three litters of four kittens a year, could theoretically result in an enormous population of 20.736 cats within 4 years and considering the above-mentioned hazards, pet animals must absolutely be controlled.

The solution of the problems is actually quite simple. The Law on the Protection of Animals (No. 5199), which was enacted in 2004, should be updated and implemented more actively. Though it has been 13 years since the law, the reason why the problems cannot be solved is both relevant ministry (Ministry of Forestry and Water Affairs) and local authorities (municipalities) having no responsibility.

INTERNATIONAL CONGRESS OF HEALTH AND ENVIRONMENT

October 23-25, 2017

Adana-TURKEY

Relevant ministries and local authorities should carry out projects on animal sterilization. It also focuses on non-surgical contraceptive methods. The Ministry of Health issues in terms of human health and zoonoses, local governments and public institutions and organizations related to environmental protection must be kept on the agenda in terms of the environment.

The importance of the issue should be well underlined by media through television and internet / written, visual and social media. Otherwise, problems that are caused by the rapid increase in the populations of these animals in the near future, which threaten human health and the environment, will reach a dangerous level.

INTERNATIONAL CONGRESS OF HEALTH AND ENVIRONMENT

October 23-25, 2017

Adana-TURKEY

OP-15 QUALITY OF WORK LIFE AND ETHICAL SENSITIVITY OF NURSES

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Objective: This study is to examine the quality of worklife and ethical sensitivity of the intensive care nurses, as well as the associated factors.

Material and Method: This descriptive study was conducted with 138 nurses. The data were collected by using “Personal Information Form”, “Quality of Work Life Scale for the Healthcare Personnel” (QWLS), and “Moral Sensitivity Questionnaire”.

Findings: It was found that 82.6 % of the nurses (n=138) were women, 63.8% had bachelor's degree, the mean score obtained by the nurses from Quality of Work Life Scale for the Healthcare Personnel and Moral Sensitivity Questionnaire were 170.54±15.13, 93.46±23.10, respectively. When evaluating the Quality of Work Life Scale for the Healthcare Personnel and Moral Sensitivity Questionnaire correlations, a negative and statistically significant correlation was found between Quality of Work Life Scale for the Healthcare Personnel and all subscales of Moral Sensitivity Questionnaire except for its benevolence subscale(p<.05). It was also determined that as the age increased, the quality of work life of the nurses (p=0.034), their holistic approach (p=0.004) and orientations (p=0.049) significantly increased as well. **Conclusion:** It was found in the study that the quality of work life and the ethical sensitivity of the nurses were moderate; a statistically significant correlation was found between Quality of Work Life Scale for the Healthcare Personnel and all subscales of Moral Sensitivity Questionnaire (autonomy, holistic approach, conflict, practice, orientation) except for its benevolence subscale

Keywords: Intensive Care, Work Environment, Nurse, Moral Sensitivity

INTERNATIONAL CONGRESS OF HEALTH AND ENVIRONMENT

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Adana-TURKEY

OP-16 THE FREEDOM OF PERFORMING AND PUBLISHING SCIENTIFIC RESEARCH SPECIFIC TO THE GENETICALLY MODIFIED ORGANISMS

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Genetically modified organisms (GMOs) were introduced to Turkey within the scope of uncontrolled imports. The laws and regulations that were published as the result of the great struggles could not change the tendency of the sector to escape from the legal control. GMOs have many aspects to be discussed, such as legality and its effects on the health and genetics of human, plant, and animal. A very important problem from the scientific point of view is revealed in accordance with the attitudes of the studies that were carried out towards GMOs and the findings that they obtained. In the beginning, the GMO producing companies tried to avoid the studies regarding their products. Later on, papers suggesting that the nutrients including GMOs were not different from the ones that grow in a natural way were published by the companies former employees. The studies documenting the negative effects of GMOs on health are being attacked both by the industry and by the scientific environments, and campaigns are being carried out to discredit these researchs by emphasizing their various deficiencies. The reflections of the study that was carried out by a team led by Gilles Eric Seralini at Caen University in France (the health problems of mice fed in long-term with feeds containing GMOs) has been so powerful that the journal chose to completely censor the paper. A group of scientists protested this by calling it as the annihilation of science.

Seralini is not the only example, whose study GMOs has been attacked; there are other scientists who are discredited and discharged. Likewise, Arpad Pusztai, a Hungarian-based British researcher, suffered from similar events as Seralini's. Pusztai, who is specialized in plant proteins, was discharged when he stated that "The immune systems of the mice, which were fed with potatoes including GMOs, are suppressed and they suffer from growth failure." regarding the study that he had been carrying out. This protein, which drives the insects away, causes nausea, vomiting, and diarrhea in mammals. The rumble caused by the explanation led Pusztai to cease the study and become discharged. In the examination of the ethics committee, the fact that the research institution discharged him was criticized, whatever the deficiencies of his specialist survey. Pusztai could only publish the results that were not considered to be dangerous, instead of the original findings of his early-terminated work.

The fact that the support of the companies to the studies determines the frame work of the scientific research has been evolving to a more serious situation in the example of GMO. That is the question of whether a scientific research can be maintained despite the interests of the industry even at the state universities. In this framework, this study will address that whether the critics on the deficiencies and inaccuracies in Seralini and his team's study and Pusztai's research are also present for the researches that are in favor of the GMOs; and the subjects of objectivity and interests will be examined.

INTERNATIONAL CONGRESS OF HEALTH AND ENVIRONMENT

October 23-25, 2017

Adana-TURKEY

OP-17 PROMOTE THE BIOETHICAL MATURITY

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In its narrowest sense, bioethics means an academic field and professional activity devoted to the study of ethical issues or value problems arising from the contemporary scientific-technical developments in medical activity. Going beyond the limits of medicine, science and technology, bioethics has become the study of our responsibilities in the face of moral issues arising from our various relations with all other species and toward life and the biosphere. In this sense, the term assumes a scope rather like what is meant by environmental or ecological ethics, which is the environment has an essential role to human existence.

During growing awareness of environmental change and damage we should be aware of the need for sustainable living. The term of sustainable refers to the level at which a resource may be used, harvested or depleted such that it is able to regenerate or sustain itself indefinitely and sustainable living involves not just efficient agriculture, but also minimizing our energy use and pollution.

Integration of economic, socio-political and ecological spheres are the three components of sustainable development and to have a sustainable future, we need to promote bioethical maturity. The bioethical maturity of a society is the ability to balance the benefits and risks of applications of biological or medical technology. It is also reflected in the extent to which public views are incorporated into policy making while respecting the duties of society to ensure individual's informed choice. Awareness of concerns and risks should be maintained, and debated, for it may lessen the possibility of misuse of these technologies. Other important ideals of bioethics such as autonomy and justice need to be protected and included when balancing benefits and risks.

**OP-18 EFFECTS OF WATER QUALITY ON PLANT NUTRIENT CONTENT AND FRUIT QUALITY
OF RUBYGAM STRAWBERRY CULTIVARY**

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Because of problematic factors such as salinity, heavy metals, pH, etc creating quality factors of waters used in agricultural production, physiological problems, losses of yield and quality is to cause to occur in plants. This study This study was carried out on the plastic covered tunnel of Adnan Menderes University Sultanhisar Vocational School in order to examine the quality of the water used in the irrigation on the nutrient content and fruit quality of the plants belonging to Rubygam strawberry variety. In the study used frigo seedling of Rubygam strawberry variety Plants were grown in plastics boxes grown medium containing 1/3 soil: 1/3 organic manure: 1/3 sand. As the irrigation water in the study were used water samples taken from the Nazilli Right Coast Irrigation Association played a role in watering a large part of the strawberry fields in Aydın, Sultanhisar District. In water samples taken from were made analyzes of pH, EC, K, Ca, Mg, Na, Cl, CO₃-2, HCO₃-2, B and SAR. The lowest pH value was found to be 7.45 but the highest pH value was 8.03 in water samples. The content of HCO₃-2 has been determined to be objectionable. The quality of the water used in the irrigation has changed from C2S1 class to C3S1 class depending on the time. It has been determined that the used canal water influences the fruit quality. The boron content of the plants irrigated with canal water was higher than that of control plants.

OP-19 DETERMINATION OF THE ENVIRONMENTAL QUALITY OF THE INTERIOR IN A HEALTH ORGANIZATION AND EVALUATION OF OCCUPATIONAL HEALTH AND SAFETY

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Aim: The aim of this study is to evaluate the internal environment quality in a public hospital where approximately 4,500 people enter and exit per day and assess it according to international standards and examine health workers in terms of occupational health and safety.

Material and Methods: In a 612 bed public hospital, indoor environmental quality measurements were made using TESTO 480 model multifunctional air conditioner. The study was carried out cross-sectional between 20.10.2016 - 03.01.2017. Measurements of CO₂ and thermal comfort parameters were taken with 10 seconds intervals and the results were evaluated by transferring them to a computer via USB cable.

Results: In the study, measurements of indoor environmental quality in a 612-bed public hospital in Istanbul were made using TESTO 480 air conditioner. Temperature, humidity, carbon dioxide (CO₂), airflow rate and lighting are measured. The CO₂ level was found to vary between 440 and 1512 ppm in all sections, the highest CO₂ level was measured in the IVP draft chamber. The illumination changed from 2 lux to 643 lux, the lowest in breast ultrasound room, the highest metabolism laboratory in the study center. Humidity was found to be in the range of 24.6% to 62%, lowest in the neurology intensive care unit, highest in the radiology patient waiting room. The temperature was measured between 20.5 °C and 27.6 °C, the lowest temperature was measured in the endocrine blood collection chamber, the highest temperature was measured in the eye nursing room.

Discussion and Conclusion: In indoor environmental quality measurements, temperature, humidity, carbon dioxide, lighting parameters did not meet international standards in some parts of the hospital. Standard values related to domestic air quality in our country were not found during the operation. It will be useful for researchers and employees to determine the acceptable standard values of indoor air quality which is a direct effect to employee health, the joint studies of relevant institutions and organizations and publication of related regulations and reference values.

OP-20 DYE REMOVAL POTENTIAL OF *PRUNUS AMYGDALUS* L. (ALMOND) SHELL AS A LOW-COST AGRICULTURAL SOLID WASTE

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Methyl orange is a common azo dye used in many industries. Because of harmful impacts, it is important to remove the dye from waste streams before discharge. In recent years, biosorption has attracted great interest for treating dye bearing effluents. Almond shell is generated in large quantities as a residue of the fruit processing and has no significant industrial and commercial uses. In this work, the optimization of the removal of methyl orange by almond shell waste from aqueous solutions was studied using the Taguchi analytical method. Several biosorption experiments were conducted using the L₉ orthogonal array with four factors in three levels. The optimum set of parameters was obtained as reaction time of 80 min, initial dye concentration of 100 mg L⁻¹, pH of 3 and temperature of 20 °C. Analysis of variance (ANOVA) displayed that the initial dye concentration was the dominant factor affecting the dye biosorption. The validation tests confirmed the reliability of the analysis results. Further, a regression model was developed as a function of the process parameters mentioned. The Langmuir model conferred the better fitness to the experimental data. These results presented the practicality of the Taguchi approach for defining the optimum conditions for the dye removal process. These findings proposed that the use of almond shell as a low cost waste biomass in biosorption system could be an effective method for the removal of such hazardous dyes from aquatic media.

Keywords: Azo dyes; Biosorption system; Biowaste; Almond shell; Water pollution

**OP-21 EQUILIBRIUM AND KINETIC STUDIES OF BIOSORPTION OF AN AZO DYE FROM
AQUEOUS SOLUTION BY WALNUT SHELL**

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Recently, a considerable number of low cost biosorbents based on agro-industrial wastes have been investigated for dye biosorption from aqueous solution. Maxilon Red GRL (MR GRL) is a model compound of azo dyes which represent more than a half of the global dye production. The potentiality of walnut shell for removal of MR GRL from aqueous solutions was examined in the present study. The biosorption studies were carried out under various parameters including pH, ionic strength, biosorbent dosage, particle size, temperature, initial dye concentration and contact time. The detailed kinetic and equilibrium studies were performed in order to characterize the biosorption process. The biosorption kinetic data were tested by the pseudo-first order, pseudo-second order and Logistic nonlinear kinetic models. The equilibrium data were analyzed using the Langmuir, Freundlich, Hill and Dubinin-Radushkevich nonlinear isotherm models. The nonlinear Logistic model was the best model to represent the dye biosorption kinetics. The biosorption of MR GRL dye showed an excellent conformity with the nonlinear Hill isotherm model. According to this model, the maximum dye biosorption capacity (q_H) for walnut shell was found as 58.21 mg g⁻¹. The nonlinear D-R model showed that this biosorption process might be a physical biosorption. The present work suggests that walnut shell could provide an efficient and cost effective technology for eliminating such azo dyes from aqueous medium.

Keywords: Biosorption; Azo dyes; Walnut shell; Waste water treatment

**OP-22 INVESTIGATION IN TERMS OF ENVIRONMENTAL FACTORS OF THE WASTE CAUSED
BY DISASTERS: SAMPLE OF 1992 ERZİNCAN EARTHQUAKE**

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Objective : Today, about building waste is needed the necessary arrangements because failure to hold the necessary transformation of destruction and waste dump, the inadequacy of the waste disposal site, loss of construction waste illegally in space cause environmental pollution.¹ In this study, it is aimed to investigate the solid wastes and the environmental problems that Erzincan Earthquake has caused and to propose what needs to be done in order to avoid this kind of difficulties in the future.

Method: The studies conducted after the earthquake disaster of 6.9 (Mw) in the province of Erzincan on March 13, 1992 were examined and collapsed or seriously damaged housing, business and transportation network of the damage to environment and people were revealed.

Result and Discussion : According to the study of Cengiz Kurtuluş in 1993, 948 houses and 825 workplaces were heavy, 2311 houses, 309 workplaces were moderate, 5822 houses and 230 workplaces were light damaged from 26,495 houses in the center of Erzincan.² Damage to the entire city is 5% brick, 9% adobe building, 34% half-timbered and 35% reinforced concrete.³ From this point of view, except domestic waste, white goods and electronic devices, it can be said that the majority of the waste produced structurally is concrete and iron.

Conclusion : Turkey has spent about \$ 650 million on rehabilitation and restructuring efforts with the help of the World Bank.⁴ When such a large cost is taken into consideration, there is a need to solve the problem of solid waste in disasters. Disaster scenarios to be prepared on provincial basis in order to protect from environment and waste problems should include these difficulties in disasters. In the framework of the TDRP (Turkey Disaster Response Plan) prepared for our country, the recycling and disposal of waste should be supported in accordance with the relevant institutions.

Keywords: Earthquake, Environmental, Erzincan, Disaster, Waste

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OP-23 SOLID WASTE PROBLEM IN DISASTERS AND SOLUTION PROPOSAL: SAMPLE OF VAN EARTHQUAKE

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Objective: In this study, it was aimed to present proposals by evaluating the stages of properly transport, storage, separation and recycling of wastes with various contents emerging as a result of disasters, which is a closely related subject to our country and the world.

Method : In the last 10 years the magnitude 7.0 (Mw) Van-Tabanlı 23 October 2011 and the magnitude 5.7 (Mw) Van-Edremit 9 November 2011 earthquakes have occurred in our country that have caused many lives and property loss.¹ In this study, the amounts of wastes arising from these earthquakes and studies on disaster waste management are examined. The damage of disaster wastes in terms of environment and public health has been examined and suggestions have been developed taking advantage of similar examples of disposal and recycling around the world taking into account the type and content of wastes generated.

Results and Discussion: Following the earthquakes that took place in 2011, Van Provincial Directorate of Environment and Urbanism reported that approximately 300 tons of wreckage in Van city center and 1000 tons of debris wastes in Erciş were emerged. After disaster, the wreckage has fallen into the areas designated by the municipality. The debris of the reinforcement is removed by firms and the rubble is still in temporary storage areas. As there is no waste management system in Van Province; there is no data such as amounts, transportation, storage and disposal of waste according to its types.²

Conclusion : As a result of the literature study, various natural disasters have shown that waste with a wide variety of contents has come to pass. Structural waste has emerged according to the type of material used in building construction (reinforced concrete, steel, whitewash, etc.), and has produced disaster wastes from households, electronic and white goods and many other recyclable and reusable materials

Keywords: Debris, Disaster, Solid Waste, Van Earthquake

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OP-24 AMOXICILLIN REMOVAL FROM WASTE WATER BY USING PECTIN NANOCOMPOSITE

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Antibiotics which have widely usage area are frequently used for the therapeutic purposes in human and animal medicine. While some of the parts of the antibiotics are used by metabolism, the unused parts reach to the sewage via urine and excreta, and then reach to the treatment plants. Physical, chemical or biological treatment methods are required for the removal of drugs from wastewater prior to discharge into the sewage treatment plants, because of their toxic and/or inhibitory effects on biological treatment plants. Therefore, detection and treatment of the antibiotics are important for ecological aspects.

In this study, pectin coated iron oxide nano-composite material (pectin nano-composite) was synthesized as an adsorbent, and its effectiveness for Amoxicillin (AMX) adsorption was investigated. FTIR, SEM and BET analyses were made to characterize pectin- Fe₃O₄ nano-composite. During the adsorption experiments; pH, contact time, adsorbent dose and initial AMX concentrations were studied.

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OP-25 BREEDING PHENOLOGY AND HABITAT CHARACTERISTICS OF LEVANTEN WATER FROG, *PELOPHYLAX BEDRIAGAE* IN ÇUKUROVA DELTA (ADANA, TURKEY)

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Aim: In amphibians, habitat characteristics have an important role especially on selection of breeding sites. The species generally does not leave the water, but lives in water, at the edge of the water or on the surface of the water. We aimed to determine preferred water parameters, habitat characteristics and the breeding phenology of *P. bedriagae* in Çukurova Delta.

Material and Methods: Study were conducted in selected station in Çukurova Delta (Adana, Turkey). We visited study sites frequently between January – April and observed the time of hibernation, mating and breeding. Egg clusters were counted as two-person and some basic physicochemical and meteorological data such as air temperature, water temperature, pH and conductivity were collected. The obtained data provided information on the characteristics of the breeding areas.

Results and Discussion: It has been observed that the period between November and January is the hibernation period and since the beginning of January frogs starting to make reproductive calls. Generally, breeding occurs between January and March, but it also hangs in early June depending on the height. Amplexus was not observed after June during the study. In August we observed 4 amplexus, but no eggs were found in this month.

Individuals with a body length of about 45mm have secondary sex characteristics and there were no individuals in amplexus below 50mm body length.

In the Mediterranean region, frogs are active for almost ten month the reason is that the winter is not harsh. Depending on the weather conditions, breeding continues from January to April. The majority of released eggs are hatch (hatching success, 90%, N = 4 egg clusters) and larvae complete metamorphosis at 45-65 days interval.

Conclusion: We observed the mating and breeding activities and the habitat characteristics of *P. bedriagae* for three years. We hope these valuable data about the species will take into consideration by relevant authorities for sustainability of the frog populations.

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OP-26 BUPRESTIDAE BIODIVERSITY OF MOUNT MUSA (HATAY)

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Aim of the Study: Contributing to the biodiversity of Mount Musa with species belonging to the Buprestidae family obtained as a result of field studies carried out from different habitats of Mount Musa (Hatay) between May-August of 2013.

Method: Samples belonging to the family Buprestidae were collected from different habitats of Musa Mount with the field works that is conducted between May and August 2013. These specimens were made into museum material, diagnosed and photographed. Identified species's locality and Turkey distribution informations are given.

Findings: A total of 107 specimens belonging to Buprestidae family were collected in field studies made from different regions of Mount Musa. As a result of the diagnosis of these specimens 11 genus and 23 species (*Polystenus rhois*, *Acmaeodera saxicola*, *Acmaeodera bipunctata*, *Chalcophorella stigmatica*, *Capnodis cariosa*, *Capnodis tenebricosa*, *Buprestis novemmaculata*, *Anthaxia nigricollis*, *Anthaxia diadema*, *Anthaxia sponsa*, *Anthaxia cichorii*, *Anthaxia karsanthiana*, *Anthaxia kiesewetteri*, *Anthaxia millefolii*, *Anthaxia mundula*, *Anthaxia olympica*, *Anthaxia praeclara*, *Coraeus rubi*, *Meliboeus violaceus*, *Agrilus relegatus alexeevi*, *Agrilus viridicaerulans rubi*, *Aphanisticus pygmaeus*, *Galbella felix*) were identified.

Discussion and Conclusion: In this study, 23 species were identified from Buprestidae family. 22 of these species are the first records for Mount Musa and the insect biodiversity of the region was provided with significant contribution. At the same time, 11 species identified in this study are new records for Hatay Province. A large number of species belonging to the family Buprestidae are known as harmful. The economic aspects of the species identified as having an important region in terms of agriculture and forestry will shed light for scientists and agricultural experts involved in the area.

Keywords: Biodiversity, Buprestidae, Mount Musa

OP-27 BIOLOGICAL CONTROL METHODS FOR PEST MANAGEMENT IN VINEYARDS

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Global consumption of organic wine continues to grow despite recent years of crisis and consequently, more and more grape growers are keen to adopt organic vine production. Vines are a crop which characterise the European landscape, where wine itself is a fundamental element of the European lifestyle. The organic viticulture is an integrated system with the end product reflecting the environmental conditions and traditional processing practices.

The pest control together with the canopy, soil, weeds and disease management are the main aspects of the organic viticulture which maximise the quality and health of the grapes. The vineyard establishment interval is considered to extend from the initiation of pre-planting activities through the several years after planting. The predominant pests of concern and specifically managed are grape phylloxera, grape mealybugs, nematodes, oak root fungus, and weeds. In all European vine growing areas, there are present these grape moths: the European grapevine moth, the vine moth, the vine bud moth. These insects can cause damage to flower organs and to grape bunches during the larval stages.

In some cases, pesticides are the only alternative in controlling pests, using a minimum amount of water mixed with a considerable amount of chemical for preparing a concentrated sprayer. In contrast to this, the refinement of monitoring techniques for these pests with the help of pheromone traps has allowed the establishment of precise and efficient direct control methods. In this investigation, will be treated the biological control methods for organic grape production, including the use of the sex pheromones on moths.

Keywords: Global consumption, environmental factor, organic grape, pest control, sex pheromone

OP-28 FUTURE TRENDS IN WASTEWATER MANAGEMENT AND DEVELOPMENTS IN TURKEY

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The technological advances in wastewater treatment over the past decades have presented an opportunity to shift the primary objective of wastewater management from “treat and dispose” to “reuse, recycle, and recover resources”. Future trends in wastewater management increasingly focus on water reuse and resource recovery, which provide the additional benefits of public health and reducing environmental pollution. Future wastewater treatment plants will be expected to deliver recovered resources and high-quality water for reuse in different sectors.

With technological development evolving rapidly, there is growing improvements shift towards wastewater management as part of a circular economy. Rather than thinking of reusing water as a costly add-on to wastewater treatment plants, the concept of converting them into ‘resource recovery factories’ that will use wastewater and sludge as a raw material and recover valuable products for marketing to end users is gaining increasing attention. There are approximately 1000 wastewater treatment plants in Turkey and new legislation will be required to accommodate and regulate the use of wastewater for a variety of uses, ranging from irrigation and industrial water recycling to aquifer recharge and the enhancement of ecosystem services.

In this paper, after giving brief information about the present status of wastewater management in Turkey, the current wastewater treatment plants and future trends in wastewater management will be considered.

Keywords: Resource recovery, water reuse, wastewater, wastewater management, wastewater treatment

OP-29 GENERATING OF SOME FOREST MAPS AND FOREST ROAD NETWORK WITH GIS

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Forest roads are the most important infrastructure for forestry activities. Forest roads connect the forest lands to existing public roads. They provide forest access for such activities as managing timber, improving fish and wildlife habitat, fighting fires, and recreation. For this purpose it needs one of the most important tools needed poses forest road networks.

Geographic Information System (GIS) provides that all of info such as topographic map, forest management plan and data of field can be configured separately in a layer. In addition to this, the collateral maps prepare according to new data from analysis of Geographic Information System. Thus, it is very important to use Geographical Information Systems (GIS) to conduct contemporary forestry studies.

The aim of this study was to generating some forest map and forest road network using Geographical Information Systems (GIS) in İkizdere Forest District of Forestry on Trabzon Regional Directorate of Forestry in Turkey. Geographic Information Systems was used graphical and attribute database in planning studies. As a result of studies was determining planned forest road network, road density, the ratio range and opening up rate. In addition, was formed digital terrain models, slope, aspect, stand type and thematic maps. All these procedures were analyzed by computer software Arc GIS.

The results showed that this method can be more helpful and road network can be designed quickly with less cost than traditional method.

Results of this study showed that GIS has strength and played a vital role in planning forest road network effectively and reduced time consuming.

Keywords: Forest Road Network, GIS, Road Density, Turkey, Cartography, Geographic Databases, Mapping, Tourism, National Park Management

OP-30 REMOVAL OF CHROMIUM HEAVY METAL FROM WASTE WATER USING VAN PUMICE

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The constantly polluting environment undoubtedly has a negative impact on the living things. Dyes and heavy metals left in the environment are taken through the food chain and cause various problems. Chromium is a pure heavy metal that can not be found in nature and can range from +1 to +6. Chromium is a metal commonly found in water courses; it is used for metal coating, metal cutting, leather tanning, dye and pigment production, mining and ore processing. Chromium is present in natural waters with two different oxidation loads, Cr (III) and Cr (VI). Cr (III) is more stable and less toxic, while Cr (VI) is more toxic with higher solubility in water. Adsorption is the process of removing ions and molecules in solution medium. For this, clay, pumice and activated carbon are used. In this study, it is aimed to remove chromium heavy metal from waste water by using Van pumice.

Keywords: Kinetic, Chromium, Van Pumice, Heavy Metal, Thermodynamics, Adsorption, Isotherm

**OP-31 CHARACTERISATION OF ACTIVE CARBON FROM ORANGE SKIN BY MEANS OF
CHEMICAL ACTIVATION AND THE USE OF IT IN THE ADSORPTION OF COPPER**

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In this study, adsorption experiments were carried out with the active carbon obtained from orange skin. The effects of changing metal concentrations and the temperature on adsorption mechanism were worked out in our research. As a result, it was observed that there are various adsorption tendencies between heavy metals and active carbon obtained from orange skin.

It was found that adsorption process fitted Freundlich isotherm. In Temkin isotherm model, increase in K_T values as temperature increases leads to increasing of maximum adsorption capacity and strengthening of relationship between adsorbent and adsorbate. In Dubinin-Radushkevich (D-R) isotherm, an E value of higher than 16 kJ/mol indicates that sorption process is chemical adsorption. From of kinetic models, it fits pseudo second order kinetic model. ΔG^0 values are negative for Cu(II) adsorption on active carbon and these values indicate that adsorption is spontaneous. These values decrease with an increase of temperature. Furthermore, better adsorption is obtained at higher temperature. In conclusion, it was found that active carbon can be used for removal of heavy metals (copper) from wastewaters.

**OP-32 CHARACTERIZATION AND IMMOBILIZED OF COPPER AND CADMIUM ON MIXTURE
FORMED WITH NUTSHELL AND AMBERLITE XAD-4**

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Solid phase extraction (SPE) is an increasingly useful sample preparation technique. With SPE, many of the problems associated with liquid/liquid extraction can be prevented, such as incomplete phase separations, less-than-quantitative recoveries, use of expensive and disposal of large quantities of organic solvents.

The aim of this study is to investigate the enrichment conditions of Cu (II) and Cd (II) ions at work level by using Amberlit XAD-4 modified with hazelnut shell as biosorbent as adsorbent by solid phase extraction method. The application of the working metal ions to the recovery samples was examined for the pH of the medium, eluent type and concentration, solution flow rate, effect of solution volume, salt effect, column reproducibility, certified reference material (Aquatic Plant Sample) and environmental samples.

At optimum conditions, at a pH 7.0 for Cu²⁺ and at a pH 9.0 for Cd²⁺, the flow rate of 1.75 mLmin⁻¹ for Cu²⁺ ions and the flow rate of 2.65 mL min⁻¹ for Cd²⁺ ions, the amount of 300 mg sorbents for Cu²⁺ and 300 mg sorbents for Cd²⁺, 1000.0 mg of Amberlite XAD-4 resin, 50.0 mL of the sample solution, recoveries of Cu²⁺ and Cd²⁺ ions were found to be 98.96 % and 98.93 %, respectively. The values of Cu²⁺ and Cd²⁺ were found as 5.80 mgL⁻¹ and 5.10 mgL⁻¹ for limit of detection (LOD), 19.20 mgL⁻¹ and 17.24 mgL⁻¹ for limit of quantitative (LOQ). The pre-enrichment factor was found to be 10 times for copper and 10 times for cadmium.

**OP-33 REVIEW OF ESTIMATION THE EFFECTS OF PETROLEUM REFINERY EFFLUENTS ON
THE PHYSICOCHEMICAL PROPERTIES FOR SURFACE WATER**

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Industrial wastewaters entering a water body represent to an overwhelming wellspring of natural contamination in waterways. It influences both the water quality and the microbial and amphibian greenery. With contending requests on constrained water assets, attention to the issues required in water contamination has prompted to significant open level headed discussion about the natural impacts of Industrial effluents released into oceanic situations. Raw petroleum, refined petroleum items, and in addition polycyclic aromatic hydrocarbons are universal in different natural compartments. They can bioaccumulation in natural pecking orders where they upset biochemical or physiological exercises of numerous living beings, in this manner bringing about carcinogenesis of a few organs, mutagenesis in the hereditary material, an impedance in conceptive limit and/or creating and causing hemorrhage in an exposed population. The cause/impact of oil poison is typically evaluated by utilizing organic end guide parameters alluded toward as biomarkers. Defilement of soil emerging from spills is a standout amongst the most constraining components to soil ripeness and consequently edit profitability

Petroleum Refinery, Petrochemicals effluents are described by their irregular turbidity, conductivity, chemical oxygen demand (COD), total suspended solids (TSS), Biological oxygen demand (BOD), and total hardness. Petroleum Refinery, Petrochemicals effluents containing a high grouping of microbial supplements would clearly advance an after-development of essentially high coliform sorts and other microbial structures. Natural contamination is constantly obvious and the contamination is aggravated via arriving based sources, for example, the infrequent release of crude sewage through tempest water outlets, the effluents from refineries, oil terminals, and petrochemical plants. Squander effluents rich indecomposable natural matter, is the essential driver of natural contamination.

OP-34 LACCASE FROM THE BACTERIA BACILLUS OKUHIDENSIS: EFFECT OF pH, TEMPERATURE AND DIFFERENT INHIBITOR AND SUBSTRATES ON ENZYME ACTIVITY

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Laccase oxidizes both phenolic and non-phenolic lignin related compounds which makes them very useful for their application to several processes. Laccases from fungal origin are typically unstable at high temperatures and alkaline conditions. This characteristic limits their practical applications. In the present study, a new bacterial strain exhibiting laccase activity was isolated from different forest soil in Kahramanmaraş. The laccase production ability and the property of this enzyme from the chosen strain is intended to be used in the industrial field. The strain was identified as *Bacillus okuhidensis* based on The Biolog Gen III Microplate method. When the *Bacillus okuhidensis* strain in a guaiacol contained medium is produced, it has shown a high laccase (level) activity. In this study the optimum conditions (pH, temperature, inhibitor) of the laccase that from the strain obtained, was researched by using different substrate. When the optimum pH interval is considered, the highest activity is in pH 9 observed, when SGZ and DMP a substrate source was used, when ABTS as a substrate source was used, highest activity is in pH 5 observed. When the optimum temperature interval is considered, the highest activity is in 50 °C observed, when SGZ and DMP a substrate source was used, when ABTS as a substrate source was used, highest activity is in 40 °C observed

OP-35 DETERMINATION OF ANTIBIOTIC RESISTANCE PROFILE OF *ESHERICHIA COLI* AND RATIO OF MULTIPLE ANTIBIOTICS RESISTANT (MAR) IN URINE SAMPLES

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Objective: A retrospective analysis of the widely used antibiotics all susceptibility testing results from *E.coli* cultured from urine samples Mugla Sıtkı Kocman University Education and Research hospital (January to December in 2015) was performed. 30 urine samples are tested.

Methods:The new BD PHOENIX automated microbiology system (Becton Dickinson Diagnostic Systems, Sparks, Md.) is designed for automated rapid antimicrobial susceptibility testing and identification of clinically relevant bacteria. MIC results previously obtained in recent clinical isolates with well-defined in isolates with well-characterized resistance mechanisms with the microdilution method were re-interpreted for the susceptible, intermediate and resistant categories using the 2012 EUCAST breakpoints.

Results: With respect to resistance pattern, the most resistant antibiotics were Trimetroprim/Sulfamethoxazole 53% and ceftriaxone and cefepime %43. While the other antibiotics, the sensitivity rates of *E.coli* were in the following order: Amikacin 100%. Gentamicin and Ceftazidime were recorded 67%. Out of the 30 *E.coli*, 8 (27%) isolates showed no antibiotic resistance.

Conclusions: Our findings with regard to microbial resistance suggest that. : Amikacin, Gentamicin and Ceftazidime are considered potent agents in the treatment of infections caused by multiresistant *E.coli*.

Keywords: *E.coli*, antibiotic resistance, urine samples

OP-36 ASSOCIATION OF VACA AND CAGA GENOTYPES with PLASTICITY REGION GENES JHP0947 and JHP0949 of HELICOBACTER PYLORI in CHILDREN with NON-ULCER DYSPEPSIA

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In addition to *vacA* (vacuolating cytotoxin) gene and *cag* (cytotoxin-associated gene) pathogenicity island (*cag*-PAI), the most important bacterial genetic virulence factors, the plasticity region genes *jhp0947* and *jhp0949* of *Helicobacter pylori* (*H.pylori*) that can be vertically and horizontally transferred like *cag*-PAI also influence the prognosis of infection. We aimed to investigate the prevalence of these virulence genes of *H.pylori* and association between them in pediatric patients with non-ulcer dyspepsia demonstrating less severe clinical outcomes.

In 31 gastric biopsy specimens obtained from children with non-ulcer dyspepsia and detected as *H.pylori*-positive by *glmM*-PCR, the “*s1*” and “*s2*” allelic genotypes of *vacA* gene, the *cagA* gene, the most important *cag*-PAI biomarker, and the plasticity region genes *jhp0947* and *jhp0949* of *H.pylori* were examined by using PCR methods.

The more virulent genotype *vacAs1* was detected in 14/31 (45.2%) samples, while the rate of the less virulent genotype *vacAs2* was 17/31 (54.8%). The *cagA*-positivity rates in these genotypes and in total were 57.1% (8/14), 29.4% (5/17) and 41.9% (13/31), respectively. The *jhp0947* and *jhp0949* were detected in 10/31 (32.3%) and 7/31 (22.6%) samples, these rates were 4/8 (50%) and 2/8 (25%) in *cagA*⁺*vacAs1* genotype and were 2/5 (40%) and 1/5 (20%) in *cagA*⁺*vacAs2* genotype, respectively.

Although the small population was investigated and statistically significant relationships was not detected between the virulence genes in our research, their prevalences were determined to be higher for the pediatric patients with mild symptoms. We assumed that co-detection of these genes by using rapid and reliable PCR methods in biopsy samples obtained from dyspeptic children during endoscopic examination will have very important predictive value for estimation of risk of progression to more severe gastroduodenal pathologies and will shed light to rational treatment planning, even though they are not diagnosed with serious diseases such as ulcer or gastric cancer by endoscopy.

OP-37 THE ROLE OF MYCOBACTERIAL INFECTIONS IN KERATITIS CASES

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The PCR-based molecular assays which successfully performed in recent years for the mycobacterial identification and the detection of drug resistance in patients with suspected tuberculosis may shed light on improving of rapid and accurate diagnostic protocols also for extrapulmonary mycobacterial infections such as mycobacterial keratitis when they will be used subsequent to DNA extraction directly from clinical samples besides culture due to isolation difficulties in culture media. Therefore, we aimed to investigate the presence and the role of mycobacterial infections in keratitis cases by using such methods.

Corneal scraping samples for the mycobacteriological research in addition to routine pathological, parasitological, bacteriological and mycological examinations were consecutively collected from 43 patients who are diagnosed as keratitis and have no pulmonary complaints in Balcali Hospital, a major hospital of Cukurova Region, Turkiye, between September 2016 and April 2017. The specimens were inoculated on Löwenstein-Jensen (LJ) and MGIT 960 liquid system, direct preparations stained with EZN method were evaluated microscopically. The presence of mycobacteria was investigated by using PCR assay with specific primers targeting *hsp65* and *IS6110* gene regions subsequent to DNA extraction directly from the corneal scrapings.

Various bacteria were isolated from 17 of 43 (39.5%) patients. Most prevalent agent was the *Staphylococcus epidermidis* (58.8%, 10/17). However, all of the samples were negative for mycobacteria with both culture and PCR methods.

Despite the fact that mycobacteria were not detected in our research which is the first study examining the mycobacterial keratitis in our country by using both phenotypical and molecular methods, considering the worldwide low incidence of mycobacterial keratitis, we have assumed that studies with larger population can provide improving of diagnostic protocols, and the expected achievement of early and accurate making diagnosis for overlooked mycobacterial keratitis will enable us to plan the treatment strategies rationally by rapid detection of drug resistance.

Keywords: DNA sequence analysis, *hsp65*, keratitis, mycobacterial infection, PCR.

OP-38 COMPARISON of GEOGRAPHICAL DISTRIBUTION of BACTERIAL SPECIES in TERMS of ECOSYSTEM and PUBLIC HEALTH in TURKISH SEAS

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Bacterial diversity studies provide data that better understand the functioning of marine ecosystems and evaluation methods for monitoring of the human-mediated pollution impacts. In this study, bacterial composition of the cultivable heterotrophic bacteria in the sea water samples, collected from various marine areas, (the Sea of Marmara, Turkish Strait System, Aegean Sea, Mediterranean Sea and the Black Sea, Turkey) were compared according to their exposure to environmental factors in different time periods between 2000 and 2016.

Occurrences of bacteria in the samples were investigated using general cultivable methods, and then the pure isolates were screened with a VITEK 2 Compact 30 automated micro identification system. To confirm bacterial species the sequences obtained were compared with known bacterial strains in which the 16S rRNA region was identified in the NCBI DNA database and the most similar species and similarity rates were determined. The primary hydrographic parameters were recorded in-situ using the CTD SEACAT Profiler at the stations.

The heterotrophic aerobic bacteria levels were high in the samples taken from coastal areas of the Sea of Marmara, Eastern Mediterranean and the Black Sea. The lowest bacteria were recorded in the samples taken from northern part of the Aegean Sea. While the most common group in terms of species number was Gamma-Proteobacteria in the coastal areas of the Sea of Marmara, the Black Sea, eastern Mediterranean and certain points of the Aegean Sea, members of the phylum Bacilli was the most common group in northern part of the Aegean Sea. It was possible to isolate enteric bacteria species from various localities which possessed salinity values between 17.0 psu and 39.2 psu during the studies. Taxonomic compositions, frequency of antibiotic resistivity and pathogeny of the isolated bacteria contributed increasing data on potential bacterial risks related to human and ecosystem health of Turkish marine areas.

**OP-39 ARSENIC CONTAMINATION AND ARSENIC-METABOLIZING BACTERIA OF VAN LAKE,
TURKEY**

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Aim: In this study, it is aimed to determine the amount of the arsenic which is a growing environmental threat in recent years in the world's largest soda lake, Van Lake; the seasonal effects on the arsenic concentration and the isolation and identification of these arsenic metabolizing bacteria and their use potential in terms of natural arsenic bioremediation.

Method: Water and sediment samples were taken from Van Lake to represent four seasons and the amount of all heavy metals with the total arsenic amount in the samples were analyzed using ICP-MS. Using the Hungate technique, arsenate [As (V)] and arsenite [As (III)] metabolizing bacteria under aerobic and anaerobic condition were isolated and 16S rRNA regions were amplified with universal primers and species identification was made. Arsenic resistance profiles of strains were determined by microplate technique using 2,3,5 triphenyltetrazolium chloride as viability indicator.

Results: 140-263 ppb in water samples and 2610-26.070 bbp arsenic in sediment samples were determined. 2 representative organisms were selected from the obtained isolates and they were identified as *Halomonas* sp. Both strains were anaerobically and anaerobically metabolized to As (V) and As (III). The highest MIC value for As (V) and As(III) in aerobic condition were found to be >320 mM and >32 mM, respectively.

Discussion: As a result of the seasonal sampling, it was come up that the lake contained arsenic at the highest rate in autumn and 2600 times more than 10 ppb, the FDA's upper limit for arsenic. However, it was concluded that *Halomonas* sp. strain obtained from the samples of autumn, in which the highest arsenic ratio was detected, showed the highest resistance against As (V) and As (III).

Conclusion: Arsenic worldwide is an increasingly environmental problem, and the threat over public health is growing steadily. Therefore, the discovery of arsenic maps of risky regions and the isolation of arsenic-resistant bacteria from these regions is very important in terms of arsenic bioremediation. In this study, it was determined the amounts of arsenic depending on the seasons of Van Lake, which is the largest soda lake in the world and not studied in this context, and found that high arsenic resistant strains obtained could be used for arsenic bioremediation from arsenic contaminated areas.

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Keywords: Van Lake, arsenic, *Halomonas* sp.

**OP-40 IS FUNGAL CONTAMINATION(ASPERGILLOSIS) in THE HOSPITAL ENVIRONMENT A
RISK in NEUTROPENIC PATIENTS?**

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Invasive aspergillosis (IA) is a major opportunistic infection in haematology patients. Preventive measures are important to control IA because diagnosis is difficult and the outcome of treatment is poor (1).

The incidence rates of invasive aspergillosis have increased dramatically during the last two decades, and, despite all diagnostic and therapeutic efforts, outcome is often fatal. The environment has been suggested to play a crucial role in the epidemiology of invasive aspergillosis (5).

Invasive aspergillosis represents one of the most serious complications in immunocompromised patients. For some authors there is a direct association between this pathology and the concentrations of *Aspergillus* conidia in the air; in addition, reports of aspergillosis concurring during building construction have been frequent (3).

Spore inhalation is the usual route of *Aspergillus* infection, suggesting a determining role of environmental contamination by spores in the epidemiology of IA (2)

Recently, Patients hospitalized in the pediatric hematology service our hospital have been suspected of having a clinically fungal pathogen in the respiratory tract. For this reason, the hospital infection committee requested the screening of suspicious areas from the microbiology laboratory. A mold image was detected at the bottom of the door. Aspergillosis was detected in this specimen. The laboratory data of patients who are thought to be clinically fungal pathogens are very few.

In spite of wide prevalence of *Aspergillus* spp. in hospital air, morphologically identical strains from the patient and environment are encountered rarely. There may be additional sources of infection and mechanisms of invasive aspergillosis onset in immunocompromised patients (4).

**OP-41 THE EFFECT OF PROPOLIS ON LIPID PEROXIDATION AND SOME ANTIOXIDANTS
PARAMETERS IN THE RADIATION EXPOSED RATS**

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Living far away from radiation is difficult in the world we live in. People and all other living creatures are always adversely affected by natural and artificial radiation. After the oxidative damage caused by the radiation in the living organism, the adverse effects of free radicals can be reduced by antioxidants taken with different foods. The aim of this study was to determine the changes on radiation exposed rats and the blood in the levels of MDA, GSH, activities SOD, GSH-Px and CAT with the application of propolis.

This research was carried out on 3 groups and 30 rats were used. Group 1 was the control group and no application was made. Group 2 was given 100 mg/kg body weight of % 0.9 saline brine intraperitoneal for three days and at the end of the application radiation (6 Gy dose of gamma rays) irradiation was applied. Group 3 was given 100 mg/kg propolis intraperitoneal for three days and at the end of the application the radiation with the same dose was applied. In blood samples taken, plasma MDA, erythrocyte GSH levels, SOD, GSH-Px and CAT activities were measured using spectrophotometric method.

After statistical analyses, when compared to the control group, in radiation group, plasma MDA ($p < 0.001$) and erythrocyte GSH ($p < 0.001$) levels, GSH-Px ($p < 0.001$), CAT ($p < 0.001$) and SOD ($p < 0.001$) activities were found to be significant. When compared to radiation group, in propolis + radiation group; while the levels of plasma MDA ($p < 0.001$) were found to be significant, levels of GSH ($p > 0.05$) in erythrocyte and activities of SOD, GSH-Px and CAT were not found to be significant.

Keywords: Antioxidant, Lipid Peroxidation, Propolis, Radiation, Rat.

OP-42 EFFECTS OF ELECTROMAGNETIC FIELD EXPOSURE ON EPIDERMIS THICKNESS OF MATURE AND IMMATURE RATS

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Objective: Skin is the first barrier where come across to environmental effects on our bodies. The density of electromagnetic field radiation has been increased around the people's lives. 900 and 1800 MHz frequencies are frequently used in mobile phone communications. For this reason we'd like to study how effect the 900 and 1800 MHz electromagnetic field (EMF) young and mature skin tissues and the thickness of epidermis.

Material-Method: Twenty four (2 weeks old) immature and twenty four mature (10 weeks old) *Wistar rats* were used. The 24 immature and 24 mature rats were divided into 6 groups. IMT (immature treatment) group was exposed to a 900 MHz (28.2±2.1 V/m) EMF and IMT 2 (immature treatment 2) group was exposed to a 1800 MHz (28.2±2.1 V/m) EMF for 8 hours per day for 45 days. IMC (immature control) group was no expose to EMF. MT (mature treatment) group was exposed to a 900 MHz (28.2±2.1 V/m) EMF and MT 2 (mature treatment 2) group was exposed to a 1800 MHz (28.2±2.1 V/m) EMF for 8 hours per day for 45 days. MC (mature control) group was no expose to EMF. All rats were euthanized by cervical dislocation on the 45th day. Skin tissue were taken and put into formalin for 48 hours. After tissue processing, samples were stained with hemotoxylin and eosin, then viewed with a light microscope (Olympus BH-2, Japan, x40). Epidermal thickness excluding stratum corneum was assessed at randomly selected five areas on every section with a micrometer eyepiece.

Result: According to our results, there was no significant differences in epidermal thickness between treatment groups (900 MHz and 1800 MHz) and control for immature and mature groups) ($p>0,05$).

Conclusion: EMF may not effect epidermal thickness of mature and immature rat's skin.

**OP-43 DETECTION OF ELECTROMAGNETIC FIELD POLLUTION IN MERSIN UNIVERSITY
CAMPUSES AND DETERMINATION OF EXPOSURE MEASUREMENTS ACCORDING TO
INTERNATIONAL STANDARDS**

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Aim: The exposure of the electromagnetic field (EMF) is a source of concern in most countries due to adverse health effects. Nowadays, technological changes (radio, microwave oven, mobile phone, devices such as computers, wireless networks and base stations) cause differences in levels of EMF. It is aimed to determine the suitability in terms of occupational health and safety (OSH) of working areas by comparing the electromagnetic power densities measured at different frequency ranges in Mersin University campuses (offices, officer rooms, corridors, laboratories, classes, cafes and garden) and the electromagnetic current densities measured at frequency of 50 Hz with the limit values according to international standards.

Method: The measurements were made with suitable using the handheld HF-7040 Aaronia Spectra Analyzer hand spectrum analyzer which allows measurements of high frequency electromagnetic field power densities at different frequency ranges. Measurements of the electromagnetic current densities at a frequency of 50 Hz were performed with a Gaussmeter (Sypris Test Measurement F.W. Bell 6010 Model Gauss / Teslameter).

Result: Measurements made with both devices were under the international exposure limit. However, statistically significant results were obtained when the electromagnetic power intensities of the buildings and the different working areas in each building were compared within the HF-7040 Aaronia Spectrum Analyzer in Mersin University campus ($p \leq 0.001$). Statistically significant results were achieved when the measurements made with Gaussmeter were compared only with the buildings in Mersin University campus ($p \leq 0.05$).

Discussion: All of the devices we use are EMF sources. It is important for the workplace where we spend a significant part of our life that the EMFs that a risk to what extent in terms of the OSH. Much research has been performed on effects of EMFs on human health. Our results were under international exposure limits. However,

INTERNATIONAL CONGRESS OF HEALTH AND ENVIRONMENT

October 23-25, 2017

Adana-TURKEY

investigations continue suggesting that the cumulative effect which occurs in the course of time may have adverse effects on human health.

Conclusions: Although EMF measurement levels do not present a problem for human health in a short time, the situation can change as the duration of EMF exposure increases. Recommendations related to the results have been produced. The results of the study will be reported to the University administration and will be informed of any proposals and possible preventative measures that may be taken to prevent exposure to EMFs and associated adverse effects.

Keywords: Electromagnetic field, occupational health and safety, disease.

OP-44 NEUROTOXIC EFFECTS OF PRENATAL ELECTROMAGNETIC FIELD EXPOSURE ON VENTRAL COCHLEAR NUCLEUS OF NEWBORN RAT

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Objective: The aim of this study is to investigate how effect the prenatal exposure to electromagnetic fields (EMF) on the neuron numbers of Ventral Cochlear Nucleus (VCN) in postnatal period.

Material-Methods: Three female pregnant *wistar rats* (age of 3 months and between 180-200 g weight) were divided into 3 groups. Group 1 (n=1) was exposed to 900 MHz RF-EMF in intrauterine term of pregnancy for 2 h/day for ten days. Group 2 (n=1) was exposed to 1800 MHz RF-EMF in intrauterine term of pregnancy for 2 h/day for ten days. Group 3 (n=1) was no exposed any RF-EMF. Pregnant rats in Group 1 and 2 were exposed HF-EMF for 2 h/day starting from 12th day of pregnancy to delivery. Control group rats were kept in the restrainer in a separate room with no radiation exposure for 10 days. After 30 days, 15 female offspring rats were perfused. The cerebellums were placed in phosphate buffered formalin in 48 hours and were embedded in paraffin. Each block was cut coronally with a thickness of 5 µm through VCN according to systematic random sampling. The slides were stained with cresyl violet acetate and coverslipped. The Nissl stained neuron numbers in the right VCN were estimated using physical fractinator.

Results: The neuron numbers of VCN in both treatment groups (Group1: 24030,00± 3912,672; Group 2: 23490,00± 1728,844) significantly decreased compare with their control group. (Group3: 35568,00± 4203,085).

Conclusion: According to our results, prenatal exposure to EMF like mobile phone usage etc. may have neurotoxic on VCN and auditory system in postnatal period. Mothers should be careful about exposing of EMF like mobile phone usage in pregnancy period.

**P-45 REMOVAL EFFICIENCY OF ANTHRACENE MICROPOLLUTANT IN KONYA
WASTEWATER TREATMENT PLANT**

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Abstract: In this study, wastewater samples provided from Konya Wastewater Treatment Plant firstly extracted according to liquid-liquid extraction method of EPA 3510C in the laboratory of Advanced Technology Research and Application Center located in Selçuk University. After the extraction processes, extracts taken into vials analyzed by gas chromatography mass spectrometry (GC – MS) via method of EPA 8270D. Analyzing both influent (raw wastewater) and effluent (treated wastewater) of wastewater samples, concentrations of anthracene in these samples were determined. In this way, removal efficiency of anthracene micropollutant which is a member of polycyclic aromatic hydrocarbons (PAH) was calculated. According to the results obtained by the analyzes, removal efficiency of anthracene in Konya Wastewater Treatment Plant was found higher than 87 %. Besides the analyzes conducted, also potential adverse health effects of micropollutants including PAH group for human and environment were investigated.

Keywords: Anthracene, micropollutants, polycyclic aromatic hydrocarbons, wastewater treatment plant

OP-46 EFFECTS OF PETROCOKE AS AN INDUSTRIAL FUEL TYPE ON HUMAN HEALTH AND ENVIRONMENT

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Petroleum coke is a black solid which primarily is made of carbon and it contains trace amounts of sulfur, elemental metals and volatile inorganic components. The first modern petroleum coke facility was found around 1930s in USA. Between 2007 and 2012, its production rate increased by 2% in the USA and by 35% in the entire world. According to the 2013 data, USA, China, India, Venezuela and Brazil are important manufacturers. Petroleum coke, with its high heating value, low ash content and relatively low price among its competitors, is widely used as an alternative fuel especially in recent years. Petroleum coke is primarily and mainly used in power plants and industrial facilities as fuel. Cement factories also use petroleum coke as fuel in their rotary kilns. According to the Turkey Cement Industry report in 2016, it has been used 70% as fuel in these factories. Turkey acts both as an importer and exporter in point of petroleum coke. The 55% of the petroleum coke produced in the world is used in cement industry. In the coming years, it's been anticipated that the petroleum coke usage will rise as electricity production increases in countries like China, Vietnam and India. Petroleum coke poses an important health risk with its handling and storage operations. EPA is especially concerned about the particles smaller than 10 μm because those can go into the lungs through mouth and throat easily. Breathing only once, these particles go into the lungs and cause severe issues. Thus, particle concentrations smaller than 10 μm have to be measured in the working area. Exposure to highly concentrated petroleum coke causes inflammatory diseases in the respiratory tract. Repeated exposure can lead to functional failure in the lungs. In the studies, no effect on reproductive systems or any cancerogenic effects have been detected.

Keywords: Petroleum coke, Industrial fuel, Cement plants

OP-47 ADSORPTION PROPERTIES OF OAK SAWDUST FOR Cd(II) IONS REMOVAL FROM AQUEOUS SOLUTIONS

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Cd(II) is a common toxic metal which spread into the environment as a result of various industrial processes including milling, textile, metal plating, stabilizers, battery manufacturing, metallurgical alloying and mining operations. The accumulation of Cd(II) in human body affects kidney, bones, and causes acute and chronic metabolic disorders, such as itai-itai disease, renal dysfunction, lung damage, emphysema, hepatic injury, hypertension and testicular atrophy and teratogenic effects. Because of its high toxicity, the Cd(II) levels in drinking water and wastewater should be reduced to below the maximum permissible concentration ($5.0 \mu\text{g L}^{-1}$).

Therefore in the present study we aimed to test the ability of natural (NOS) and H_2SO_4 modified oak (*Quercus petraea* L.) sawdust (AMOS) to remove Cd(II) ions from waters and wastewaters through batch adsorption process. The NOS and AMOS were characterized with different techniques. For adsorption tests, 10 mL of Cd(II) solutions in the concentration range of $50\text{--}650 \text{ mg L}^{-1}$ at initial pH 4.0 were added into the polyethylene centrifuge tubes. Then 50 mg of NOS and AMOS (5.0 g L^{-1} suspension) were transferred into the solutions, separately and then the mixture was shaken on a mechanical shaker at 400 rpm. After reaching the equilibrium (120 min), the suspension was centrifuged at 3000 rpm for 10 min, and the concentration of the dilute phase was analyzed for the Cd(II) concentration using a flame atomic absorption spectrometer. The effects of solution pH, contact time, initial Cd(II) concentration, and adsorbent concentration were evaluated upon the Cd(II) adsorption onto NOS and AMOS. The influences of foreign ions were evaluated by using different concentrations of BaCl_2 and NaCl solutions. The experimental data were analysed by different isotherm and kinetics model.

Taking into account of the findings of this study, it can be concluded that the natural and H_2SO_4 modified oak sawdust can be used as an effective, economical and easily available adsorbents in removal of Cd(II) ions from aqueous solutions.

Keywords: Adsorption, Removal, Oak, *Quercus petraea* L., Cadmium, Kinetics, Isotherm

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**OP-48 THE CHANGES IN SOME PHYSICOCHEMICAL PARAMETERS OF AKPINAR STREAM
(AĞIN, ELAZIG) THROUGHOUT FLOW DIRECTION**

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The Akpınar Stream is discharging into the lake at the northwestern coast of Keban Dam Lake. In this study, the changes in some physicochemical properties such as pH, temperature, electrical conductivity (EC), dissolved oxygen, NH_4^+ -N, NO_2^- -N, NO_3^- -N and PO_4^{3-} -P during the rainy and dry seasons were investigated in the stream water and the causes of these changes were discussed. For this purpose, water samples were collected from five stations marked from upstream to downstream. pH, temperature and EC values were measured *in situ* using the YSI model multi-meter and the dissolved oxygen was measured with the oxygen meter. Other parameters were analyzed using kits with DR6000 spectrophotometer. The EC, pH and dissolved oxygen values of the waters in the dry season were found to be higher than that in the rainy season. However, there was no changes at temperature between two seasons. It has also been determined that there was an increase in the EC value from upstream to downstream. There was no significant differences amongst stations in term of dissolved oxygen, pH and temperature. According to the inland water quality classifications, the water of Akpınar Stream was in III and IV quality class according to dissolved oxygen; in II and III quality class according to NO_2^- -N; in II, III and IV quality class according to NO_3^- -N and in I quality class according to NH_4^+ -N. In general, the concentrations of NO_2^- -N and NO_3^- -N of the Akpınar Stream was higher in the rainy season. However, the highest concentration of NO_3^- -N (59 mg/L) was measured in the dry season. The highest NH_4^+ -N value was determined in station 3 during the rainy season. The dissolved oxygen concentration was showed the lowest value in station 3 during the both dry season (2.65 mg/L) and rainy season (2.58 mg/L). This situation may be related to slow flowing of surface water and the shallow water depth in the station 3. The high concentrations of NO_2^- -N and NO_3^- -N analyzed in stream water were estimated to be derived from agricultural fertilizers, domestic wastes, and septic tanks, which flow through the settlement area of Ağın district.

Keywords: Akpınar Stream, Ağın, Nitrate, Nitrite, Pollution

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OP-49 THE EFFECTS OF 1800 MHZ RADIO FREQUENCY RADIATION ON UTERINE CONTRACTILITY

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Objective: Extensive use of mobile phones raises the concern about the health effects of 1800-MHz radiofrequency (RF) radiation. The uterine smooth muscle is able to produce regular spontaneous contractions without any hormonal or nervous stimuli. Uterine contractions are important in many reproductive functions including the transport of sperms and embryo, menstruation, pregnancy and parturition. The aim of this study was to evaluate the possible effects of 1800 MHz GSM-like exposure on uterine contractions.

Material and Methods: Twenty-nine female rats were used in this study. The rats were divided into three groups as control, sham and experimental group (9 animals per group). Control group was kept in the normal condition of the laboratory. Experimental group of rats were exposed to 1800 MHz RF radiation 2 h/day for 60 days. The animals in the sham group were introduced into the exposure system 2 h/day for 60 days but not treated with RF radiation. On the nineteenth day, following cervical dislocation, uterine horns were isolated and uterine strips were prepared from horns. For the recording of spontaneous activity, the uterine strips were placed vertically in 20 mL organ baths with Krebs solution. When the contractions became regular, data acquisition was started for all groups using electrophysiological recording station. In this study, Fast Fourier Transform is used to analyze the uterus spontaneous activity records. Fundamental frequency and amplitude of fundamental frequency was calculated from the recordings.

Results: The contraction frequency decreased significantly in experimental group compared to control and sham groups ($p < 0.05$). There was no significant difference in the amplitude of fundamental frequency between the groups ($p > 0.05$).

Conclusion: The findings of the present study indicate that 1800 MHz RF radiation causes impaired uterine contractile activity. This impaired contractile activity may lead to significant health problems in reproductive life.

**OP-50 INVESTIGATION OF FREE LIVING AMOEBAE IN NATURAL WATER RESOURCES IN
ADANA**

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Aim: Free Living Amoebae (FLA) have been causing lethal parasitosis in humans for years. Primary amoebic meningoencephalitis (PAM) leading to *Naegleria* causes with mortality, while *Balamuthia* and some *Acanthamoeba* species cause progressive granulomatous amoebic meningoencephalitis (GAE). It has also shown that various *Acanthamoeba* species cause keratitis. Previous studies on FLA in parasitologically in natural water sources have not been reported from Adana and its surroundings, so it was aimed to determine the prevalence of FLA in water samples collected from lakes, streams and water channels.

Materials and Methods: Seventy two water samples were taken from the Seyhan dam, stream and water channels and bringing them to Çukurova University, Faculty of Medicine, Parasitology Department laboratory.

Results: It were detected that *Acanthamoeba* in 3 samples positive with microscopy and 8 samples positive with culture and 11 samples positive with real time polymerase chain reaction (rt-PCR). The parasites of the genus *Naegleria* and *Balamuthia* were not found in any way.

Discussion: In this study, the lack of information in the related literature in our region has been overcome and it has been determined that *Acanthamoeba* parasites are at risk for public health.

Funding was provided by the Çukurova University Research Grant TSA-2015-3706.

OP-51 DIAGNOSIS OF CUTANEOUS LEISHMANIASIS BY REAL-TIME POLYMERASE CHAIN REACTION IN ÇUKUROVA REGION, TURKEY

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Objectives: Leishmaniasis threatens about 350 million people in 98 countries around the world. As many as 12 million people are currently infected, with about 1–2 million estimated new cases occurring every year. Turkey is one of the affected countries, the increase in the number of patients suffering from the disease is alarming not only for Syria but for Turkey as well since leishmaniasis has also reached since 2011. In this study, it was aimed to perform diagnostic evaluation on the suspected cutaneous Leishmaniasis cases by conventional and molecular methods.

Methods: A total of 84 smear samples were taken from cutaneous leishmaniasis suspected cases and sent to Department of Parasitology laboratory, Faculty of Medicine, University of Cukurova for conventional and molecular analysis between June 2015 - June 2017. Giemsa-stained skin smears were analysed by microscopic examination and through real-time PCR method.

Results: Forty one (41/84; 48.8%) and 57 (57/84; 67.9%) smear samples were positive for cutaneous leishmaniasis according to the microscopic examination and real-time PCR method, respectively. Three different *Leishmania* species were found in the 57 cutaneous leishmaniasis cases by real-time PCR: 71.9% (41/57) *Leishmania tropica*, 22.8% (13/57) *Leishmania infantum* and 5.3% (3/57) *Leishmania major*. The results of real-time PCR were confirmed with *Leishmania* ITS1 DNA sequencing.

Discussion: There is a significant risk that cutaneous leishmaniasis will re-emerge in southern Turkey where the natural vector of *L. tropica*, *L. infantum* and *L. major* already exists. Not just refugees, but also travelers can be affected by leishmaniasis and potentially serve as sources of transmission where the relevant sand flies reside.

Conclusion: Clinical suspicion of cutaneous leishmaniasis is the key to diagnosis. Skin samples are the first choice for seeking confirmation of the parasitic cause of otherwise unexplained skin lesions, but real time PCR is more sensitive and is particularly useful when giemsa-stained skin smear histology is unrevealing.

OP-52 DETERMINATION OF SPATIAL DISTRIBUTION OF VECTOR SAND FLY SPECIES OF CUTANEOUS LEISHMANIASIS IN KARAISALI IN ADANA, TURKEY

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Aim: This paper presents the results of an entomological survey in an endemic focus of cutaneous leishmaniasis in Karaisali province of Adana in Turkey.

Methods: There were two field works in two consecutive years (2013 and 2014), which 1088 sand fly specimens were captured using 136 light traps which were conducted in 11 villages of Karaisali located in southwest part of Adana.

Results: Totally, six *Phlebotomus* species were described: *Phlebotomus tobbi* (41.54%), *Phlebotomus neglectus/syriacus* (9.74%), *Phlebotomus papatasi* (25.18%), *Phlebotomus perfiliewi* (3.49%), *Sergentomyia dentata* (18.38%) and *Sergentomyia theodori* (1.65%). The female/male rate was found to be 1.98. *Phlebotomus tobbi*, *Phlebotomus papatasi*, *Phlebotomus neglectus/syriacus*, *Sergentomyia dentata* and *Sergentomyia theodori* were dominant at 201-400m, 0-200m, 801-1000m, 401-600m and 601-800m respectively.

Discussion: Environmental and climatic factors were compared for the presence of sand flies species especially vectors of cutaneous leishmaniasis by univariate binary regression analysis in PASW. Sand fly density maps were generated based on the elevation they were caught by using ARCMAP 10.2. The data also revealed a relationship between presence of the probable vector sand flies and several environmental factors such as altitude, temperature, trap location and humidity in Karaisali.

Conclusion: Karaisali province has the richest sand fly fauna in Southern Anatolia. *P. tobbi* is a dominant sand fly species, and it could trigger CL transmission Yazibasi, Boztahta, Catalan and Altinova villages. We suggest that in addition to experimental laboratory studies the effects of sampling location and geographical factors on the distribution of sand fly species be determined to better understand the biology of vector species. Estimating the impact of emerging foci and dynamics of vectors and diseases may also be helpful.

Keywords: Sand fly, Fauna, Spatial Distribution, Cutaneous Leishmaniasis, Geographical Information Systems, Adana

**OP-53 PRODUCTION AND PURIFICATION OF A NOVEL THERMOSTABLE RAW STARCH
HYDROLYZING α -AMYLASE OBTAINED FROM *Bacillus mojavensis* SO-B11**

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Aim : A novel thermotolerant *Bacillus mojavensis* SO-B11 was isolated from thermal springs mud sample in Şımak (Meyremderesi), Turkey.

Material and Methods: Influences of various parameters such as incubation time, temperature, pH and different detergent on α -amylase production were examined. α -Amylase was purified by DEAE-cellulose ion-exchange chromatography. Characterization revealed that purified α -amylase remained stable over a broad pH and temperature range as compared to the crude enzyme.

Results: The highest production conditions of α -amylase was defined at 36th hour, 35 °C and 7.0. α -Amylase was purified 34 fold with a yield of 18%. The α -amylase showed a molecular mass of ~73 kDa by sodium dodecyl sulphate-polyacrylamide gel electrophoresis (SDS-PAGE). This purified α -amylase showed maximum activity at pH 5.0-6.0 and 70 °C and exhibited stability over a wide variety of pH and temperature at 4.0–8.0, and 40–50 °C, respectively. The thermostable purified α -amylase showed stability in the presence of inhibitors, and heavy metal ions. The purified enzyme hydrolyzed the raw starches of corn and wheat grains in the ratio of 36.7% and 39.2%, respectively. In addition, the usage of purified α -amylase in domestic washing detergent industries were evaluated.

Discussion and Conclusion: Studies about industrial enzymes are becoming more important since the enzyme technology is developing. Therefore, in our study, amylase which has a great industrial importance was produced easily and economic processes and was partially purified in optimum conditions.

Keywords : α -Amylase, *Bacillus mojavensis*, Raw starch, Purification, Detergents

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OP-54 SEROPREVALENE OF HEPATITIS B BEFORE AND AFTER THE NATIONAL HEPATITIS B VACCINATION PROGRAM CENTRAL LABORATORY OF BALCALI HOSPITAL

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Approximately two billion people around worldwide are thought to be infected with Hepatitis B Virus (HBV). In fact, the virus carrier rate is 5-8% in our country. Moreover, it can be regarded as the middle endemic region. The national Hepatitis B Vaccine Program (NHBVP) is being implemented by the ministry of health since 1998. Hepatitis B vaccine contains an inactive HBV surface antigen, which develops antibodies against this antigen after vaccination prophylaxis.

HBV data from August 2016-August 2017 (one year) were analyzed retrospectively in our laboratory. Patients were divided into two groups according to their age ranges. Group A was comprised of patients with a birth date of 1998-2017, born after the National Hepatitis B Vaccine Program (NHBVP) application, which has been conducted from 1998. Group B was comprised of patients born between 1978 and 1997 and born before NHBVP application. When two groups of data compared, isolated HBsAg positivity was found to be 65.3% for Group A, 45% for Group B, 3.2% for group A, 4.7% for group B. Anti-HBs and anti-HBc positivity rates were 1.01% for group A and 3.8% for group B as a naturel immunity marker. Anti-HBs and anti-HBc positivity rates were found as 12.1% for group A and 8.4% for group B respectively.

In this findings, anti-HBs positivity and anti-HBc negativity were higher in Group A, (1.01%) of anti-HBs and anti-HBc positivity as a natural immunity marker in Group A were succesful in achieving the goal of NHBVP administration.

Keywords: Hepatitis B, seroprevalence, vaccination schedule

OP-55 SYNTHESIS AND CHARACTERIZATION OF PISTACHIO PEELS-CONTAINED POLYOLS

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In this study, pistachio peels (red and stiff) were liquefied with four different acid catalyst concentrations and in two different liquefaction periods by micro-wave heating method. Synthesis reactive were used three kinds of forms; as only red peel, only stiff peel and by mass of 50% red peel + 50% stiff peel. 350 watt/min as micro-wave energy, 300 rpm/min as mixing speed and mass ratio as Biomass/PEG400/Glycerol 5/12/3 w/w/w had been constanted. The physical properties of biomass-contained polyols (reaction product) as density, viscosity and surface tension were measured in accordance with ASTM-4669, ASTM D 4878 and Pendant Drop Method respectively. In addition to this, the number of the acid and hydroxyl ions which situated in the polyols were determined in accordance with ASTM D 4662-08 and ASTM D 4274-05 individually. The reaction enthalpy of liquefaction synthesis reactions were calculated theoretically.

The maximum liquefaction ratio was realized for red peel with 15% w/w x ($m_{\text{PEG400}} + m_{\text{glycerol}}$) acid catalyst concentration and 15 min reaction period, none the less, this condition for stiff peel was with 6% w/w ($m_{\text{PEG400}} + m_{\text{glycerol}}$) acid catalyst concentration and 30 min reaction period.

All liquefaction reactions were exothermic and reaction enthalpies were negative.

Keywords: pistachio, peel, liquefaction, micro-wave heating, characterization

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OP-56 ASSESSMENT OF RENEWABLE ENERGY PRODUCTION PERFORMANCES OF OECD COUNTRIES

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Aim: The purpose of this study is to assess the renewable energy performances of OECD countries. Two of the most important problems of human beings are global warming and climate change, both of which are sources of natural disasters in the new century.

Method: In the study, performance evaluation was carried out by Data Envelopment Analysis (DEA) which follows an objective path. DEA is a nonparametric method based on Operations research. It considers multiple inputs and outputs simultaneously. In practice, by setting the efficiency frontier according to the bests, it assigns a performance score to the others according to this boundary. In practice, by setting the efficiency frontier according to the bests, it assigns a performance score to the others according to this boundary.

In the study utilized OECD renewable energy statistics of 2015. The data are divided into population and converted into per capita. The inputs of the model come from all renewable energy capacities, GDP per capita and outputs are all renewable energy productions. The types of energy that considered are hydraulic, wind, solar, biogas and geothermal.

Findings: The countries that are efficient in the CRS model are as follows: hydrolic (Iceland), wind (Denmark, New Zealand, Portugal), sun (Greece, Spain), biogas (Chile, Finland), geothermal (Iceland, Italy and New Zealand). Countries that are efficient in terms of energy types in the VRS model are: hydrolic (Estonia, Hungary, Iceland, Israel, Mexico, New Zealand,), wind (Denmark, Israel, Mexico, Spain, New Zealand, Portugal, Slovakia), solar (Germany, Greece, Iceland, Ireland, Mexico, Spain), biogas (Chile, Finland, Israel, Latvia, Mexico, Poland, Turkey), geothermal (Hungary, Iceland, Italy, Korea, Mexico, New Zealand, Poland, UK). According to CRS model, average renewable energy performance of OECD countries are as follows: (39,59%, 70,10%, 56,70%, 55,56%, 30,95%, 50,58%). The performance scores for Turkey in the same order are as follows: (37,43%, 80,25%, 40,75%, 45,13%, 68,47%, 54,41%). The VRS performance scores are equal to or higher than these scores for all DMUs.

Conclusion and result: Some proposals are made for inefficient countries.

Keywords: Renewable energy, Performance, Data Envelopment Analysis, OECD.

OP-57 THE BALANCE OF CHANGES OF RENEWABLE ENERGY AGAINST GREENHOUSE GAS EMISSIONS IN THE MOST POLLUTING COUNTRIES: A MALMQUIST INDEX APPROACH

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Aims: The purpose of this study is to show greenhouse gas emissions and renewable energy balance changes in the most polluting countries and partitions of these changes and sources. If there is a change of balance, “at which direction?”: Direction of renewable energy side or emissions side and the numerical size of these changes.

Methodology: Efficiency calculations were done with Data envelopment Analysis (DEA). Total factor efficiency changes computed with Malmquist Index (MI). Unwanted emission variables as inputs and positive renewable energy variables as outputs were selected. Output oriented, constant returns to scale model is used. Efficiency change, technological change, pure efficiency change and scale efficiency changes were calculated. Greenhouse gas emissions and renewable energy data was taken from World Bank and IRENA sources. Undesirable inputs are carbon dioxide, methane, nitric oxide. Desirable outputs are hydroelectric, wind, solar, biogas, geothermal energy. The data for the period 2005-2015 of 50 countries, including the majority of the world, were taken into consideration.

Findings: Briefly in this process, best 3 countries towards renewable energy versus emissions direction from total factor efficiency change points of view are the followings; Venezuela (totfaceffchange= 2.286, effchange=1.885, techchange=1.215, pureeffchange=1.776, scaleeffchange=1.061), Russia (1.635, 1.322, 1.000, 1.625) and Israel (1.629, 1.297, 1.256, 1.000, 1.297) respectively. The worst three countries from the standpoint of consideration are: Avusturya (0.660, 0.660, 1.000, 0.660, 1.000), Brazil (0.802, 1.000, 0.802, 1.000, 1000) and Netherlands (0.828, 0.913, 0.908, 0.916, 0.997). The values of Turkey in the observed period are: Turkey (1.038, 1.056, 0.982, 1.065, 0.992).

Conclusion and Result: Some proposals and interpretations were made for all countries related with greenhouse gases and renewable energies.

Keywords: Greenhouse gas, Renewable energy, Performance, Data envelopment analysis, Malmquist index.

OP-58 TREND AND STABILITY OF EUROPEAN UNION COUNTRIES AND TURKEY'S WASTE MANAGEMENT PERFORMANCE

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Aims: As is known, waste is a the global warming factor and waste is a very important environmental problem. The purpose of this study to compute, compare and rank the waste management performance of the countries of the European Union and Turkey. Along with that is to specify the stability and trend of the waste management performance of these countries.

Methodology: Efficiency assessments were done with Data Envelopment Analysis (DEA). If multi-period data exist in combination with the individual efficiency of each Decision Maker Unit (DMU), it is often important to perform a panel data analysis where the focus is on changes in efficiency over time. However, for this purpose, one approach to performing longitudinal analysis is to compare cross-sectional performance series across the number of time periods in the study. This approach introduces variability into the analysis because it treats the performance of a DMU in each time period as independent from its performance in the previous period. And in this way the stability and trend of the performance of DMUs can be determined. Output oriented, constant returns to scale model is used. Waste management indicator data were taken from official European statistics site (Eurostat). The data belongs to the years 2004-2014. The records are kept for 2 years unlike the general application. Inputs are waste, intensity and GDP per capita. Outputs are landfilling, deposit onto or into land, , incineration and recovery. Undesired output variable direction changed; its inverse received.

Findings: The ranking of countries with the best waste management performance over the years studied is as follows: Hungary (mean=100%, standart deviation=0, range=0), Bulgaria (100%, 0, 0), Latvia (98.74%, 2.59, 7.61), Finland (98.56%, 4.31, 14.38) and Estonia (98.12%, 3.08, 8.98). The overall values of the waste management performance of European Union countries during the whole process are as follows: (74.86%, 23.83, 68.82). Turkey's ranking among these countries is 8 and values are as follows: (93.71%, 13.13, 44.66).

Conclusion and result: Some suggestions and comments will be made on the European Union countries and Turkey's waste management performance.

OP-59 TOTAL LIPID CONTENT AND FATTY ACID COMPOSITION OF SIX SPECIES OF MICROALGAE

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The present study aimed to evaluate the total lipid content and fatty acid composition of six species (*Isochrysis affinis galbana*, *Tetraselmis suecica*, *Phaeodactylum tricorutum*, *Chaetoceros* sp., *Nitzschia* sp., *Spirulina platensis*) were investigated.

The microalgae were cultured under laboratory conditions and harvested at the late exponential phase. Cultures and *Spirulina platensis* were maintained at room temperature (21±1°C, 30±1°C; respectively) under 40 µmol photon m²s⁻² light intensity on a 12:12-h light/dark cycle and were aerated continuously. Total lipids of microalgae were extracted and determined by modified method of Bligh and Dyer (1959). Fatty acid methyl esters (FAMES) were obtained by lipid esterification as previously described by Prevot and Mordred (1976), and the fatty acid composition were determined by gas chromatography (7890A, Agilent Technologies, USA) equipped with a DB-Wax column (Agilent Technologies, USA). FAME components were identified by comparisons with retention time of FAME standards.

Significant concentrations of the polyunsaturated fatty acid 20:5(n-3) (eicosapentaenoic acid) were obtained each of the three diatoms *Phaeodactylum tricorutum*, *Chaetoceros* sp., *Nitzschia* sp., (20-40%, of the total fatty acids). The data obtained show that *Spirulina platensis* contains high levels of gamma-linolenic acid, an essential polyunsaturated fatty acid. The fatty acid composition of the *Spirulina platensis* cultured show that (in order of abundance) palmitic, linolenic and linoleic acids were most prevalent. The microalgae *Isochrysis affinis galbana* determined in high levels of polyunsaturated fatty acids and docosahexaenoic acid. *Isochrysis affinis galbana*, C14:0, C16:0, C18:1, C18:4(n-3) and C22:6(n-3) were the major fatty acids. *Tetraselmis suecica* determined in the high levels of eicosapentaenoic acid and the major fatty acids were C16:0, C18:1, C18:3(n-3), C18:4(n-3) and C20:5(n-3).

Keywords: Microalgae, lipid, fatty acid composition.

**OP-60 THE EFFECTS OF NITROGEN LIMITATION ON THE GROWTH AND
FUcoxANTHIN PRODUCTION, LIPID AND FATTY ACID COMPOSITION OF A DIATOM**

***Chaetoceros* sp.**

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In this study, the effect of different nitrogen concentrations limitation on growth, fucoxanthin production, lipid and fatty acid composition of a diatom *Chaetoceros* sp. was examined.

Chaetoceros sp. FIKU035 was obtained from the Chantaburi Coastal Fisheries Research and Development Centre, Chantaburi Province, Thailand. Cultures were maintained at room temperature (25±1°C) under 50 µmol photon m²s⁻² light intensity on a 12:12-h light/dark cycle and were aerated continuously. Experiments were carried out by cultivation of 10⁴ cells mL⁻¹ of *Chaetoceros* sp. 1 L cylinder tubes containing sterilized F/2 (Guillard and Ryther, 1962) medium with a salinity of 27±1 ppt. Effects of different nitrogen (NaNO₃) concentrations limitation, F/2 medium of 2ml/L⁻¹ (control), 1.5ml/L⁻¹, 1ml/L⁻¹, 0.75ml/L⁻¹, 0.5ml/L⁻¹, and 0.25 ml/L⁻¹ were prepared. Experiments were performed at different nitrogen concentrations limitation under 100 µmol photon m²s⁻² light intensity on a 12:12-h light/dark cycle in a growth chamber (LGS-5201, Labtech, Korea). The specific growth rate and biomass and biomass productivity, cell density, chlorophyll *a*, total carotenoid, protein, lipid and lipid productivity, fatty acid methyl esters and fucoxanthin contents were determined and showed significant differences (p<0.05). At the end of the study, the best growth and fucoxanthin production was detected in the control group, while the highest lipid ratio was detected in 50% N deficiency. As a result, it was observed that while nitrogen limitation increased to the lipid amount, decreased the biomass, cell density, chlorophyll *a*, total carotenoid, fucoxanthin and protein contents of the cell.

Keywords: *Chaetoceros* sp., nitrogen limitation, growth, lipid, fatty acids, fucoxanthin.

**OP-61 RECOVERY OF GOLD AND SILVER BY LEACHING FROM FLOTATION CONCENTRATE
WASTE RECEIVED COPPER AND COBALT**

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Gold is found in nature as gold-silver alloy, sometimes known as pure or electrum, sometimes in tellurides. Elements can be replaced with elements chemically resembling themselves in the crystal cages of the minerals such as copper, silver or minerals such as pyrite (FeS₂), arsenopyrite (FeAsS), chalcopyrite (CuFeS₂), stibnite (Sb₂S₃), orpiment (As₂S₃) and Elements are observed in small inclusions in minerals such as realgar (AsS) (1-2)

The ore containing 4.93 % Cu, 0.01 % Co, 0.92 % Zn 11.41, % Fe, 10.72 % S, 4.72 g/t Au and 12.80 g/t Ag was obtained from district of Hatay-Kisecik. In this study, by roasting of flotation concentrates obtained in optimum flotation conditions, this method was applied to the remaining residues after the copper, cobalt and zinc has taken into solution (1, 2). The results of the residues analysis found to be 15.74 g / t Au, 29.15 g/t Ag, 0.01% Cu and 0.10% Zn. Afterwards, the residues were extracted with cyanide, thiosulfate and thiourea. Although yield of gold was higher than 96 % by thiosulfate extraction, this process was not effective on silver. 97.85 % of gold and 86.30 % of silver were passed into the solution by thiourea solution extraction. Cyanide solution extraction showed that all of the gold and 96% of the silver went through the solution (3-4).

Keywords: gold, silver, extraction, metal, leach

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**P-62 COMPARISON OF EXPERIMENTAL AND THEORETICAL VALUES OF FLY-ROCK
DISTANCE CAUSED BY BLASTING**

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Blasting which has a wide usage area in opencast mining cause environmental problems. These problems are vibration (tremors), air shock (noise), fly-rock, dust and polluting gases. Flyrock caused by blasting activities is one of the crucial and complex problems in mining industry. There are several empirical methods to predict flyrock distance. Determination of flyrock distance has a remarkable role in reduction and control of blasting accident in surface mines. Flyrock by blasting, is the major cause of considerable damage on the nearby structures and injury human in surface mining. Therefore, flyrock prediction is required to determine safe blasting zone. There are several empirical formulæ for prediction of flyrock phenomenon but this empirical formulæ usually does not calculate correctly at flyrock distance by blasting

This study examined of flyrock distance resulting from blasting operations at limestone quarry in Adana, Karaisalı, Karapınar region. This distance is compared with the value of the theoretical calculation. The flyrock distance by blasting was calculated with SVEDEFO and flyrock distance of the observed blasting was same value. According to specific charge approach, fly-rock distance was very low value. In addition, flyrock distance by blasting was measured at study area with distance meter and GPS. As a result of this study, there were differences between the values calculated according to SVEDEFO and the specific charging approach and the values measured.

Keywords: Blasting, Flyrock distance, Environmental effect.

OP-63 PASTEURELLOSIS CASES IN SEA BASS AND SEA BREAM CULTURED IN THE AEGEAN REGION AND OTHER BACTERIA ISOLATED FROM THESE CASES

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The aim of this work was to research the phenotypic characteristics and antibiotic susceptibility profiles of *Photobacterium damsela* subsp. *piscicida* isolates obtained from sea bass and sea bream cultured in the Aegean Region and to draw attention to other bacterial agents accompanying Pasteurellosis. The study materials consisted of 185 fish (104 sea bass, 81 sea bream) samples with clinical symptoms of Pasteurellosis that were presented to the National Reference Laboratory of Fish Diseases in Bornova Veterinary Control Institute between 2009-2011. For bacterial isolation, samples from internal organs (spleen, liver, kidney and heart) and damaged body surfaces were cultured in Tryptic Soy Agar (TSA, LABM), Brain Heart Infusion Agar (BHIA, LABM), Marine Agar (MA, DIFCO) and Blood Agar (BA, LABM). All media were supplemented with 1% NaCl. Afterwards, petri dishes were incubated for 24-48 hours in 25- 28°C. After incubation, colonies were identified with conventional microbiological methods. Isolates identified as *Photobacterium damsela* subsp. *piscicida* were confirmed with PCR. Other bacterial isolates were confirmed with the VITEK II Compact system. We used disc diffusion method for bacterial susceptibility. *Photobacterium damsela* subsp. *Piscicida* was isolated from 6 (5.7 %) of the 104 sea bass samples and from 10 (12.3 %) of the 81 sea bream samples with clinical symptoms of Pasteurellosis. Two *Pseudomonas anguilliseptica* and 2 *Aeromonas sobria* isolates were obtained in 4 of these pasteurellosis positive sea bass samples. *Vibrio alginolyticus*, *V. vulnificus*, *Pseudomonas fluorescens*, *A. sobria*, and *A. hydrophila* were obtained from 7 of the pasteurellosis positive sea bream samples in frequency of 2, 1, 1, 1, and 3. 13 of the *Photobacterium damsela* subsp. *piscicida* isolates were found to be sensitive to FFC (81.25 %), 11 to ENR (68.75 %), 7 to SXT (43.75 %) and 6 to OA (37.5 %). Five of the isolates were found to be susceptible to E (31.25 %) and 4 of them (25 %) were sensitive to DO, OT and UB. All of the isolates were resistant to AM respectively. In the light of the data obtained in this work; it can be concluded that *Photobacterium damsela* subsp. *piscicida* is an important pathogen in our country as well as the world, and other pathogenic bacteria can also be isolated from these cases.

INTERNATIONAL CONGRESS OF HEALTH AND ENVIRONMENT

October 23-25, 2017

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OP-64 SOME METAL CONCENTRATIONS CARRIED BY RIVERS IN THE NORTHWESTERN REGION OF KEBAN DAM LAKE

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The present study aims the accumulation and sources of some metal concentrations in Keklikpınarı, Akpınar, Kozluk and Tahar rivers that feed Keban Dam Lake at the northwestern region. Deep and shallow Lake water samples collected from close locations to the discharge areas of rivers are also investigated within the present study. Chromium (Cr), Copper (Cu), Iron (Fe), Zinc (Zn), Nickel (Ni) and Cobalt (Co) concentrations in the rivers and lake waters were analysed in dry and rainy seasons. The contents of Cr, Cu, Fe, Zn, Ni and Co in rivers were range between 2.8 and 3.2 ppb, 0.3 and 1.2 ppb, 16 and 184 ppb, 0.8 and 56 ppb, 0.7 and 1.5 ppb, 0.03 and 0.36 in dry season and range between 0.02 and 0.39 ppb, 0.01 and 0.1 ppb, 35 and 142 ppb, 0.5 and 5.8 ppb, 0.3 and 1.3 ppb, 1 and 18 ppb in rainy season, respectively. Fe is determined at the highest concentration in dry season whereas Cu is analysed at the lowest concentration in rainy season in rivers. Generally, Fe and Cr concentrations were decreased from the upriver to the downriver and conversely, Co, Zn and Cu concentrations increase from the upriver to the downriver. Metal accumulation of the deep lake water samples are higher than the shallowers related with the precipitation rate of the metals. Metal concentrations (except Co) of lake waters are higher in dry season. Higher Fe and Co accumulations are determined in lake waters close to the downriver of Tahar. Metal concentrations in river and lake waters must be predominantly originated from the interaction of river waters with volcanic and sedimentary rocks outcrop along their flow direction. Increasing concentrations of Co, Zn and Cu in rivers along their flowpath indicate the suspension of these metals in water and also reflect the continuing water-rock interaction.

Acknowledgement: This study is financially supported by TÜBİTAK Research Fund (Project no: 114Y091).

**OP-65 VIRULENCE GENE PROFILES OF *CAMPYLOBACTER JEJUNI* FROM CATTLE
SLAUGHTERHOUSE WASTEWATER ISOLATES**

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Aim: The aims of this study were to investigate the presence of *Campylobacter jejuni* in cattle slaughterhouse wastewater samples, and to determine the virulence gene profiles of the isolates by PCR.

Material and Methods: A total of 64 cattle slaughterhouse wastewater samples were collected in Hatay. Classical cultural method and PCR were used for the isolation and identification of *C. jejuni*. All isolation mediums were used with gas generating kits for making microaerobic conditions. One colony from each sample was identified to the species level by PCR. For DNA extraction, grey-coloured colonies were selected and DNA extraction was performed using a Bacterial DNA Extraction kit, following the kit manufacturer's instructions. DNAs were stored at – 20 °C until PCR analysis. For identification of *C. jejuni* by PCR, amplification of 16S rRNA (*Campylobacter* genus specific) and *cj0414* (*C. jejuni* specific) genes were targeted. Then, some virulence genes (*cdtA*, *cadF*, *wlaN*) responsible for the pathogenicity of *C. jejuni* were investigated in the isolates by PCR.

Results: Overall, *C. jejuni* was detected in 3 cattle slaughterhouse wastewater samples. In this study, all of the *C. jejuni* isolates harbored *cdtA* gene responsible for the expression of cytotoxin production, while *cadF* and *wlaN* genes were not detected in any of the isolates.

Discussion: *C. jejuni* is an important foodborne zoonotic pathogen found in the gastrointestinal tract of animals. The transmission of *C. jejuni* to humans usually occurs with consumption of contaminated food and animal products and contaminated water. This bacterium causes gastroenteritis in humans and also, extraintestinal symptoms such as neurological disorders may occur in some cases of campylobacteriosis. This study indicates that cattle slaughterhouse wastewater samples are also possible sources of *C. jejuni* and spreading of the bacterium to environment may cause infections in humans.

Conclusion: As a result, cattle slaughterhouse wastewater may cause environmental contamination with pathogenic *C. jejuni*. Therefore, contamination should be controlled by improving hygienic conditions at slaughterhouses within the framework of HACCP programs.

This study is second part of the project which was supported by Mustafa Kemal University under the BAP project code 15170.

OP-66 WATERBORNE DISEASES AND PROTECTION WAYS FOR PUBLIC HEALTH

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Introduction: Water is indispensable in many places such as drinking, cleaning (vegetable, fruit, washing, etc.), taking bath, swimming, watering the gardens. Inorganic and organic wastes (heavy metals, pesticides, etc.), human waste, animal feces are among causes of water pollution. Therefore, ecological changes, inadequate public health work, and structural changes in microorganisms are factors affecting the frequency of contaminated waterborne diseases. This study was conducted to evaluate waterborne diseases in terms of public health.

Material and Methods: In this study; water dripping, watering, succulent and succulent diseases have been evaluated in terms of public health.

Results: Waterborne diseases; 1. Water-dish diseases; Water-dish disease is a disease caused by fecal-oral infectious diseases and poisonous substances in the water resulting from urine and fecal contamination. You can also eat food by washing it with water or mixing it with water. Some of them; cholera and other diarrheal diseases, typhoid fever, polio, round worms and hair warts. 2. Water-tax diseases; These diseases are caused by the contact of the polluted water with the soil, the spreading of the water or the depression. 3. Diseases from water; It is a disease caused by the drinking of water in the pest or the accidental passage of this water. They are diseases like schistosomiasis and gynecuria. 4. Water related diseases; are infectious with vectors such as mosquitoes breeding in water or near water. 5. Water-scarce diseases; are caused by insufficient personal hygiene practices due to water shortage. Since all of these diseases are developed after drinking or using water, water used must be clean.

Discussion: Waterborne diseases can be transmitted from the water that we use for any purpose, so we need to analyze the water we use, to use clean water and to consume the products (fruits, vegetables, fish, etc.) that are grown with clean water.

**OP-67 PHARMACEUTICALS AND PERSONAL CARE PRODUCTS (PPCPs) POLLUTION IN
GÖLBAŞI LAKE, TURKEY**

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The presence of active pharmaceuticals and personal care products (PPCPs) in the aquatic environment has led to public concern for environment and human health from exposure through drinking water. Pharmaceuticals enter to the environment via many ways; such as excretion through the body or washing of topical medicines down the drain, etc.. There is a lack of data about the occurrence and levels of pharmaceuticals and personal care products in the lakes of Turkey. This study assessed to determine PPCPs from Gölbasi Lake, which located at the middle of Turkey, in Gölbasi, Adiyaman. Water samples collected over the periods of spring, summer and autumn 2014. A sensitive liquid chromatography-tandem mass spectrometry (LC-MS/MS) screening method and solid phase extraction was used for the analysis of 95 pharmaceutical compounds from variety of drug groups (pain killers, antimicrobials, cardiovascular drugs, hipolipidemics, central nervous system drugs, insect repellents and stimulants).

14 of the 95 pharmaceutical substances analyzed were found in lake waters samples. Oxcarbamazepine, carbamazepine, lidocaine, caffeine and DEET were identified in all sampling seasons. Caffeine which is used as an indicator of anthropogenic impact in the aquatic environment was detected at the highest concentration (12.32 ng/L).

Currently, very little is known about the occurrence, fate and behavior of PPCPs in Turkey's aquatic environment. Moreover they can contaminate groundwater which constitutes water supply in some regions of Turkey. Detected environmental concentrations of these pharmaceuticals are low, but when they behave together may be toxic to the non-target aquatic organisms.

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OP-68 SOIL PROPERTIES AND PROBLEMS IN KONYA REGION

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Konya is the biggest city of Turkey with respect to the surface area. 5% of the total surface area of Turkey belongs to Konya. The climate of Konya is terrestrial with semi-arid properties. In addition, the mean annual temperature is around 11.6 °C and total annual precipitation averages 338.2 L/m². The main source of living in Konya depends on the agriculture, mainly wheat production. Total amount of cultivated agricultural areas is 19,074 km² and 29% of which are irrigated with ground water and surface water. Moreover, main soil types in this region are Brown Soils, Reddish Brown Soils, Alluvial Soils and Regosols. These soil types have special properties affecting fertility and agricultural production. For example, brown soils have relatively stable topsoil with well-developed polyhedral or spheroidal structure and have low to moderate base saturation, contain large, active populations of soil organisms so they are fertile and appropriate for agricultural purposes while regosols show weak mineral composition so they are not good for agriculture. When the main soil properties and land use in the area is considered, there are several problems may be occurred. These are salinization because of the insufficient drainage, drought climate, high temperature, wrong fertilization, high water tables and irrigation with poor quality waters, high pH and lime due to the presence of limestones, lack of organic content due to inappropriate fertilizer usage, and erosion. In this paper, main soil types and soil properties around Konya region were investigated and problems that can be caused by both anthropogenic and natural reasons were explained. Also, some recommendations about the solution of these problems were given.

**OP-69 EVALUATION OF THE KNOWLEDGE AND RELEVANCE OF LABORATORY WORKERS
AND MEDICAL LABORATORY PROGRAM STUDENTS ABOUT OCCUPATIONAL RISKS**

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Health care workers face many occupational risks, especially infections. In addition to biological and chemical risk factors, workers in the laboratory environment are also exposed to physical and psychological risks.

In this study, we aimed to search for their knowledge and attitudes towards occupational risks of laboratory workers and medical laboratory program students.

119 volunteers participated to the study. In the questionnaire form 41 questions were asked. All feedback was evaluated statistically. 35 of the participants were laboratory workers, 84 were medical laboratory program students. When the expression "I think that the occupational risks of laboratory workers are high" was examined, there was a significant difference between the workers and the students ($p=0,021$). 85.7% of the employees and 58.3% of the students participated in the statement "I have received training in occupational health and safety". There was a difference between employees and students in terms of "I know the importance of sterilization and disinfection applications" and "I would pay attention to biosecurity applications" ($p=0,034$, $p=0,022$). In terms of the expressions questioning the practices related to infectious diseases did not differ between the two groups. 91.4% of the workers and 84.5% of the students thought that negative external stimuli in the working environment increased the level of occupational risk. There was no difference between the groups for the phrase "I got the necessary tests and vaccinations in terms of infectious diseases".

It is very important for health workers to participate and update their training on occupational health and safety for their own health and safety. Also for students, improving their knowledge and skills about laboratory safety is significant.

As a result, both our laboratory employees and students are required to determine their perceptions to occupational risks. Also it is important to see the results of the trainings in practice for students.

Keywords: *Laboratory, Risk, Student, Questionnaire Survey.*

**OP-70 ASSESSMENT OF THE MTHFR C677T AND APOB G10708A GENE POLYMORPHISMS
RELATED TO CARDIOVASCULAR DISEASES IN HEALTHY BLOOD DONORS**

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Aim: Cardiovascular diseases are the most important cause of morbidity and mortality in the world and in Turkey. Although age is a risk factor for cardiovascular diseases, they are not only the causes of death for people over 65 years old, but also for all age groups. Some studies showed that MTHFR C677T and APOB G10708A mutations are common genetic risk factors for cardiovascular diseases. Although these risk factors are studied on defined patient groups, the effects on healthy individuals are still not clear. For this reason, we investigated the frequency of MTHFR C677T and APOB G10708A polymorphisms among healthy blood donors depending on age in blood center of Cukurova University.

Material and Method: The study was conducted by age on 96 male donors. The patients were separated into two age groups between the ages of 20-39 and 40-59. Peripheral blood was collected into EDTA-containing tubes for genetic analyses. DNA was extracted from buffy coat using DNA blood kit (Qiagen, Germany) and stored at -80°C for later use. The polymorphisms were determined by PCR using TIB, MOLBIOL, LightMix kits (CN: 40-0593-64, 40-0594-64).

Results: The results revealed that when donors were evaluated for MTHFR C677T gene polymorphism, the 14.58 % of donors in 20-39 age group and 8.33 % of donors in 40-59 age group were mutant genotypes (T/T). The 39.58 % of donors in 20-39 age group, the 27.08 % of donors in 40-59 age were heterozygous (C/T) and others were homozygous (C/C). Also, we were found that all donors in both groups were homozygous genotypes (G/G) for APOB G10708A gene.

Conclusion: A comparison of genotype frequencies among healthy populations at different ages is a useful strategy for polymorphisms associated with common diseases such as vascular diseases. According to this study, MTHFR C677T and APOB G10708A gene polymorphism regarding cardiovascular diseases were not related to age ($p < 0.176$). But, further studies are needed in the healthy population to better understand the etiology of the cardiovascular diseases.

Keywords: Cardiovascular disease, MTHFR C677A, APOB 10708A, Polymorphism

OP-71 THE TRANSFORMING GROWTH FACTOR- β 1 (TGF- β 1) GENE POLYMORPHISM (TGF- β 1 T29C) AND RISK OF PREECLAMPSIA IN TURKISH PREGNANT WOMAN

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Introduction

Essential hypertension is thought to be caused by both genetic and environmental factors, with varying combinations in different individuals (1). Although the aetiology of preeclampsia (PE) is still not clear, placental, immune and genetic factors are thought to play an important role in its pathophysiology. The aim of the present study was to investigate whether the transforming growth factor- β 1 (TGF- β 1) gene polymorphism (T29C) is correlated with PE risk.

Method

In this study, 55 preeclamptic and 67 normotensive pregnant women were genotyped for TGF- β 1 gene T29C polymorphism by RFLP (restriction fragment length polymorphism) analysis and the distribution of genotype and allele frequencies belonging to this polymorphism in preeclamptic patients and controls were also evaluated.

Results

Among controls, the TGF- β 1 gene T29C genotypes of CC, CT and TT were observed in 27%, 64%, and 9% respectively, whereas the CC, CT and TT genotypes were observed in 24%, 63%, and 13% of case patients, respectively. The C allele frequency was 55% in PE patients while it was 59% in controls. The T allele frequency was 45% in PE patients while it was 41% in controls.

Conclusion

There were no differences in allele and genotype frequencies between preeclamptic patients and controls, for TGF- β 1 gene T29C polymorphism. It is not known whether T29C polymorphism has a functional effect on the TGF- β 1 gene. Therefore, it was not possible to determine whether this polymorphism promotes the progression of PE since there was no statistically significant difference between patients with PE and controls.

Keywords: Preeclampsia; Transforming growth factor- β 1; T29C polymorphism; RFLP; Pregnancy

This study was supported by Cukurova University Scientific Research Projects Unit (Adana, Turkey) with TF2014BAP2 number.

OP-72 INVESTIGATION OF EXPRESSION LEVELS OF ALZHEIMER RELATED-GENES IN HFD AND STZ INDUCED THE TYPE 2 DIABETIC RATS

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Alzheimer disease (AD) and type 2 diabetes mellitus (T2DM) are conditions that affect a large number of people in the industrialized countries. AD and T2DM share several molecular processes that underlie the respective degenerative developments. Disturbances in insulin signalling appears to be the main common impairment that affects cell growth and differentiation, cellular repair mechanisms, energy metabolism, and glucose utilization. Insulin not only regulates blood sugar levels but also acts as a growth factor on all cells including neurons in the CNS. The increase in extracellular matrix levels occurred well before the onset of plaque formation and was paralleled by impairments in hippocampal long-term potentiation and contextual memory. The aim of this study is to investigate expression levels of ADAMTS4, TIMP3, RELN, BCAN genes that encoded brain extracellular matrix proteins in type 2 diabetic rats induced by high fat diet (HFD) and streptozotocin (STZ).

Wistar rats were allocated into four groups: control, HFD, STZ-diabetes or HFD-STZ. The weight changes and fasting glucose levels of the rats were measured each week. All of rats were sacrificed at the end of twenty weeks and hippocampus were removed for the subsequent studies. ADAMTS4, TIMP3, RELN and BCAN gene expression in the hippocampus tissue was measured. In addition, neuronal count and morphology in the hippocampus areas was assessed.

ADAMTS4, TIMP3, RELN and BCAN mRNA expression levels were HFD-STZ induced type 2 diabetic rats lower than control group. STZ-diabetes and HFD-STZ rats were observed compared to control rats neuronal shrunken which a specific finding of neuronal damage. In addition HFD-STZ rats encountered plaque-like structure.

As a result, T2D and insulin resistance can develop findings similar to those of Alzheimer's pathology.

Keywords: Type 2 Diabetes, Alzheimer, ADAMTS4, TIMP3, RELN, BCAN.

**OP-73 EVALUATION OF GENE POLYMORPHISMS OF CYTOCHROME P450 FAMILY ENZYMES
IN DRUG ABUSE INDUCED DEATHS**

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The most important issues in forensic toxicology are drug use and opiate addiction. The overdose-related mortality of these substances is usually due to opiates such as morphine, codeine, dextromorphine, ethylmorphine and tramadol. Cytochrome P450 (CYP450) is a family of enzymes that employs the phase I metabolism of endogenous and exogenous compounds. In Phase I reactions, the functional groups of the foreign compounds are metabolized by major CYP450 family enzymes (such as CYP2D6, CYP2C9, CYP2C19). However, CYP450 oxidation leads to highly toxic or carcinogenic metabolites due to inactive drug metabolites or adverse drug reactions (ADR). Polymorphisms are defined in all major CYP450s, which may affect gene and protein expression along with CYP450 enzyme function. The aim of this study is to evaluate CYP2D6 and CYP2C9 enzyme polymorphisms in drug abuse induced deaths in postmortem subjects.

In this study, drug abused postmortem samples CYP2D6*3 (n=38), CYP2D6*4 (n=49), CYP2D6*6 (n=48), CYP2D6*9 (n=47), CYP2D6*10 (n=49), and CYP2C9*2 (n=53) single nucleotide polymorphisms (SNPs) were analyzed with TagMan drug metabolism genotyping assay kit employing Real-Time PCR in Cukurova University.

The CYP2D6 * 4, CYP2D6 * 6, genotype frequencies were statistically different comparing drug abusers to healthy controls.

The nucleotide alterations of metabolizer genes observed among individuals may be useful in predicting drug responses, developing treatment protocols or evaluating toxicity. Such studies may also provide a rational basis for the understanding of pharmacogenetic applications and drug-related deaths in forensic toxicology.

Keywords: CYP450, Drug abuse, Forensic Toxicology, Pharmacogenetic

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OP-74 THE EFFECTS OF MEDICAMENTS USED IN AQUACULTURE ON ENVIRONMENTAL HEALTH

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The amount of medicament used in the prevention and treatment of diseases in the aquaculture sector is increasing day by day. These medicines cause negative effects on microorganisms and environment as well as on fish. The effects on the environment of drugs used for human and animal health began to be investigated about 15 years ago. Many of the medicaments used in aquaculture are used unconsciously and illegally. After treatment, the active ingredients in the medicines enter the environment in different ways, mixing with the fish, water and soil. After treatment, the active ingredients in the medicines enter the environment in different ways, mixing with the fish, water and soil. Their impact on the environment is poorly understood and has recently become a research topic. Today, only a small proportion of the effects of these drugs on the environment are known. It is not right to assume that these substances do not cause significant damage to humans. Because, it is not very clear how they affect various organisms in the environment and what this means for environmental health. Increase in algal production in water, decrease in oxygen, and organic enrichment at the sediment interface are thought to be potential environmental effects of chemicals used for the treatment and control of fish diseases. Potential biological or ecological adverse effects of such medicaments may vary substantially depending on the amounts used, the application form (mixing with water or feed), the type of farm applied and the technology applied. Particular attention should be paid to the use of antibiotics among many chemicals used in aquaculture; since a certain amount of these compounds is widely used both as a prophylactic and as aquaculture to treat disease. It has been reported that most of the antibiotics used in the aquaculture, at least 75% are exported to the environment and accumulate on the surface of sediment in the water. Antibiotics enter the environment from feces, from uneaten antibiotic feed or it enters the environment by mixing directly into the water. There is still a lack of reliable information on the presence and effects of drugs used in aquaculture. Approximately 20 years after the start of industrial aquaculture, proof of transfer of antibiotic resistance markers has emerged between aquatic bacteria including fish pathogens and human pathogens. It has been reported that this process lasts longer in terrestrial animal breeding. The acceleration of this process requires a significant reduction in the use of severe antibiotics in aquaculture to prevent the emergence of antibiotic resistance in fish pathogens and environmental bacteria, and the passage of this resistance to human pathogens. In particular, it is proposed that developing countries have unlimited use of antibiotics in aquaculture, potential to affect human and animal health globally, and that this problem should be addressed with local and global preventive approaches.

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OP-75 THE IMPORTANCE OF AQUATIC RECREATION AREAS IN URBAN LIVING AND THEIR CONTRIBUTION ON HEALTH

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The rapid increase in population, the dizzying developments in science and technology, make human life more intense and stressful. Daily activities, it has begun to force people more and to tire. Besides, adverse environmental effects also affect the physical and psychological health of person. A very important part of the population lives in big buildings in cities and this lifestyle people removes especially children from natural life. For today's people, especially the leisure time outside the working time, full, happy, satisfying, rest at the same time, having fun and learning activities is important in reducing stress. The meaning of recreation is the vitality and renewal of human beings both in terms of body and spiritual.

One of the recreational activities known since the first ages is the close monitoring of aquatic life. Aquatic life presents a relaxing visuality and information about itself to human beings. It is obvious that aquariums will be a versatile decoration tool for living spaces as well as restful effects when considering the above reasons and will also affect the quality of life positively by reducing stress. The lack of nature and nature history museums in our cities may be seen as a suitable motivation for the dissemination of the aquatic life-based recreation of the decrease in the possibility of healthy contacts that should be found between man and nature. Aquariums that will be installed in shopping centers, schools, and other living areas in contemporary cities today, especially in residential buildings, will allow people to contact nature from another perspective. The recreational areas where the aquatic life is observed will give people the opportunity to relax in the natural life.

OP-76 CHRONIC CAFFEINE CONSUMPTION CAUSE TO REDUCE NEUROGENESIS IN REM SLEEP DEPRIVATED RATS

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Aim: Sleep is a requirement for a lot of physiologic process like learning and memory. Caffeine is common psychostimulant drug that is found beverages and food. But the effects of chronic caffeine consuming unknown on neurogenesis in REM sleep deprived. We searched the effects of chronic caffeine consuming on adult neurogenesis in the REM sleep deprived rats.

Material and Methods: Male Wistar rats (n=25) 8 weeks old were assigned into five groups: control (C), caffeine (Cf), sleep deprivation (SD) and caffeine / SD (SD +Cf), pedestal control (PC). Rats were deprived from sleep by placing into Plexiglas tanks. Animals for the SD, caffeine / SD and PC groups were remained on the pedestals from 02:00 p.m. to 08:00 a.m. and returned to the vivarium from 08:00 a.m. to 02:00 p.m. for 21-days (18h). Caffeine was administered chronically during 5 weeks in drinking water (0.3 g/L). RT-PCR technique was used for Dcx, Ascl1, Fos genes expression by Fluidigm Access Array. The results were analyzed by SPSS 11.5 statistic software.

Results: According to our genes expression results, Fos expression decreased significantly in Cf, SD, SD+Cf groups compare to control (p<0.05). For Dcx and Ascl1 expression, there is significant decrease in Cf and SD groups compare to control (p<0.05).

Discussion: Sleep has recently seemed as an important modulator of neurogenesis. Prolonged restriction of sleep cause decreases in hippocampal neurogenesis. In the literature, caffeine consumed at low doses chronically decreases neurogenesis. In our study, caffeine chronically consumed by rats at relevant doses which same as human's daily consumption. We showed the effect of caffeine at relevant doses didn't show any protective effects on hippocampal neurogenesis in chronic duration. Also that consumption didn't tolerate negative side effects of sleep deprivation.

**OP-77 EFFECT OF RYE TRANSLOCATION ON AGRONOMIC TRAITS OF BREAD WHEAT IN
RECOMBINANT INBRED LINE POPULATION**

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Genotype, environment and genotype x environment interactions affect quality and yield of wheat. Biotic and abiotic stresses cause to decrease the yield of crop. Chromosome 1R of rye is an important gene source to increase yield potential and resistance for some diseases in modern breeding programs. It has known that wheat genotypes with rye translocations can challenge to drought stress, rust and powdery mildew diseases but it has generally negatively affect for quality traits of wheat. Different types of rye translocations are available in the literature, in this study Tahirova2000 cultivar -bearing 1BL.1RS rye translocation- has been used as a parent. Five control varieties and 145 recombinant inbred lines obtained from Tahirova2000 and Tosunbey crossing were molecularly screened for rye translocation. Using RIL's were tested for Eskişehir in 2013, 2014 and 2015, growing seasons and date on thousand kernel weights, plant height, seed yield, number of seeds per square meter, number of spikes per square meter, number of spikes per square meter, harvest index and NDVI measurements were collected. The phenotypic characters of the bearing rye translocation lines were compared to those of non-carrying rye translocation lines. The lines with rye translocations had lower average yield and thousand kernel weights than those that non-carried rye translocation while they have the later heading dates.

Keywords: Wheat-Rye translocation, Bread wheat, Date of heading, Seed yield, Thousand kernel weights

**P-78 DETERMINATION OF THE HMW-GS IN LANDRACES AND MODERN CULTIVARS IN
BREAD WHEAT**

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High molecular weight glutenins subunits (HMW-GS) are an effective biomarker to identify the bread-making quality of wheat. HMW-GS of Turkish landraces and modern bread wheat varieties were screened by SDS-PAGE method. Three alleles at Glu-A1, six at Glu-B1 and seven at Glu-D1 different banding patterns were identified in 126 genotypes. The occurrence of Null subunits that is 58,7% in the lines has the highest percentages, other subunits are 1 subunit is 6,3% and 2* subunits is 34,9% in Glu-A1 loci. The rate of 17+18 subunits is 3,2%, that of 7+8 subunits is 62,7% which is the highest rate in the lines, that of 7+9 subunits is 7,1% and that of 6+8 subunits is 22,2% in Glu-B1 loci. The frequency of subunits of Glu-D1 for 5+10, 2+12, 2.1+12 and 2+12' and rate of them are 18,3%, 63,5%, 6,3% and 9,5% respectively. Other Glu-D1 alleles are 2+12.1, 2+12.1' and 2+12*. Determining HWM-GS of landrace varieties will help to design new breeding strategies to use landraces as genetic resource.

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**OP-79 STATE OF AWARENESS ABOUT HEREDITARY BLOOD DISEASE OF SECONDARY
EDUCATION STUDENTS**

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Background: Hemoglobinopathies are known to be most common hereditary blood disease and, constitutes important public health problem especially in Cukurova region of Turkey. We did a pilot study aim of to understand and raise awareness of the subject of secondary education student.

Methods: In our study, we apply a questionnaire in students of Adana Science and Art Center and than give a conference about the subject. After that we apply a second questionnaire to understand how much information they have learned. Data were analyses as statistically.

Results: While the students have knowledge about hereditary disease, they increased awareness about hereditary blood diseases after the conference. It is important to raise awareness about hereditary blood diseases which are an important health problem in our region because of its haven't got any radical treatment.

Conclusion: We think, informative studies on secondary education students will help in the fight against hereditary blood disease.

OP – 80 TUBERCULOSIS IN THE ELDERLY: THE EVALUATION OF 65 YEARS AND OLDER CASES REGISTERED IN ADANA KARŞIYAKA TUBERCULOSIS DISPANSERY, 2013-2016

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Aim: The purpose of this study was to evaluate the tuberculosis cases older than 65 years old in Adana Karşıyaka Tuberculosis Dispansery.

Methods: In this study, 45 patients (≥ 65 years) with tuberculosis who were treated in Adana Karşıyaka Dispansery from 2013 to 2016 were assessed retrospectively. Patients with diagnosed tuberculosis who had ARB by Ehrlich Ziehl-Neelsen staining method in clinic material, *Mycobacterium tuberculosis* complex in culture, radiologic, and histopathologically diagnosis as tuberculosis were included in this study.

Results: The mean age was 74,5 years, 25 patients were female, 20 patients were male. Of the patients, 36 were newly diagnosed, one patient was defined as treatment failure, five were relapse and three were defaulter. Over a period of 4 years, 45 cases were diagnosed with tuberculosis; 28 cases were pulmonary tuberculosis (PTB) and 11 cases were extrapulmonary tuberculosis (EPTB). Six PTB cases had concurrent EPTB. Of the patients diagnosed to have PTB, 20 and 11 were smear positive and negative, respectively. Tuberculous culture was performed in 28 PTB cases. Culture was positive in 19 of the PTB cases. Also, smear negative four cases were found culture positive. Drug-susceptibility tests for streptomycin, isoniazid, ethambutol, and rifampicin were performed in 18 culture positive specimens and the resistance rates were found to be 5.5%, 27.7%, 11.1%, 22.2%, respectively. The rate of multidrug resistance was one. Eight patients had any drug resistance. The results of the treatment regimen were: cure in eight cases, completed treatment in 27 cases, drop-out in one cases, treatment failure in one cases, death in four cases, still treatment in 1 cases and transport in two cases.

Conclusion: Tuberculosis is a significant health problem in the elderly and the control of tuberculous in this group is essential for the overall success of tuberculous control programmes. For correct treatment, resistance should be determined.

Keywords: Drug resistance, elderly, tuberculosis

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OP-81 HEALTH POLICIES FROM PAST TO PRESENT

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In this study, general health policies from past to present are examined in detail. In the present study, it is intended to introduce which health policies solve the health problems in what level. While doing so, health policies are categorized periodically and detailed in terms of developmental stages in healthcare. The study has a qualitative style, and the Comparison Method has been made use of. In the study, healthcare is compared from past to present. It is concluded that the Health Transformation Program, (HTP) founded with the purpose of ethic approach and aimed that all people reach qualified healthcare equally, is improvable, sustainable and is related to the socio-economic realities of the country. The study is important in that it investigates the healthcare policies in which socio-economic precautions are taken and efforts are given by categorizing the periods, and reaches important results.

Keywords: Health, healthcare, health policy, the health transformation program

**OP-82 HISTOPATHOLOGICAL INVESTIGATION OF GLYPHOSATE TOXICITY IN THE
MANTLE AND FOOT TISSUES OF *Melanopsis praemorsa* LINNAEUS, 1758
(GASTROPODA:PROSOBRANCHIA)**

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Aim: It was aimed to determine the histopathologic changes in the mantle and foot tissues of *M. praemorsa* samples, after glyphosate application in sublethal concentrations.

Method: *M. praemorsa* samples used as test material were subjected to laboratory adaptation for 30 days. After adaptation, the snails were separated into 4 groups. Group I. Control group Group II. Exposed to 0.933 mg/L glyphosate concentration Group III. Exposed to 1.867 mg/L glyphosate concentration

Group IV. Exposed to 4.666 mg/L glyphosate concentration

Sublethal doses of glyphosate were administered to the groups for 30 days. In order to determine the histopathological changes, histological preparations of the mantle and foot tissues taken during the 10th, 20th and 30th days of the experiment were prepared from groups. Histopathologic changes were interpreted and photographed by light microscope.

Results: After examining the mantle and foot tissues of the specimens at the end of the process, lesions like swelling and desquamation in the epithelium, atrophy in muscle fibrils, increase in lipid vacuoles, in pigment cells, in mucous cells and in protein cells and necrosis; were observed.

Discussion and Conclusion: Due to the exposure of *M. praemorsa* specimens to glyphosate at 0.933 mg / L, 1.867 mg / L and 4.666 mg / L concentrations for 30 days, histopathological changes in mantle and foot tissues were found to increase in proportion to dose and duration. In conclusion, this study shows that the sublethal concentrations of glyphosate cause damage to body tissues of *M. praemorsa*.

Keywords: *Melanopsis praemorsa*, glyphosate, mantle, foot, histopathology, snail.

OP-83 EFFECT OF QUERCETIN ON TOTAL OXIDANT / ANTIOXIDANT LEVEL IN RAINBOW TROUT (*ONCORHYNCHUS MYKISS* H., 1843) SERUM

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Aim: This study was conducted to determine the effect of quercetin, an antioxidant source in rainbow trout, on total oxidant / total antioxidant status (TAS), total oxidant status (TOS) and oxidative stress index (OSI).

Material Methods: A total of 30 rainbow trout (*Onchorhynchus mykiss* H., 1843) were used in this study. A control and two trial groups were created. Only salt solution (NaCl) was administered orally to the control group (C, n = 10). Group 1 received orally 12.5 mg / kg quercetin. Group 2 received 25.0 mg / kg of quercetin. Quercetin was applied to fish for 20 days. At the end of the experiment, blood was taken from trout and TAS, TOS and OSI in serum were analyzed.

Results: In group 2, TAS was significantly higher when compared to group 1 and control group (P <0.001). TOS in Group 1 and Group 2 were significantly lower than the Control Group (P<0.01). The higher quercetin dose (Group 2) significantly increased OSI (P<0.05).

Discussion and Conclusion: Findings showed that high dose quercetin increased the total antioxidant level and oxidative stress index while lower doses reduced total oxidant status.

OP-84 PURIFICATION AND CHARACTERIZATION OF THE CARBONIC ANHYDRASE ENZYME FROM GOAT LIVER AND INHIBITION EFFECTS OF SOME HEAVY METAL IONS ON ENZYME ACTIVITY

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Objective: In present study, the carbonic anhydrase was purified and characterized from goat liver for the first time. Also, the toxic effects of some heavy metal ions on carbonic anhydrase enzyme activity were investigated.

Material and Methods: The purification procedure consisted of a single step affinity chromatography on Sepharose 4B-L-tyrosine-sulfanilamide. For determination the enzyme purity and subunit molecular mass, sodiumdodecyl sulphate polyacrylamide gel electrophoresis (SDS-PAGE) was performed and single band was observed. In addition, the inhibitory effects of some heavy metal ions (Pb^{2+} , Hg^{2+} , Co^{2+} , Fe^{2+} , Ag^+ and Cu^{2+}) on goat liver tissue CA enzyme activities were determined.

Results: The enzyme was purified 359.18 fold with a yield of 55.6%, and a specific activity of 61229.2 EU/mg proteins. The subunit molecular weight of enzymes were evaluated as 27.70 kDa for liver tissue. Some kinetic parameters of goat liver CA enzyme such as K_m , V_{max} , k_{cat} and V_0 values were obtained 4.027 mM, 0.368 EU/mL, 1328.51 s^{-1} and $3.3 \times 10^5 \text{ mM} \times \text{s}^{-1}$ for the first time in this study. Additionally, activation enthalpy (ΔH), activation energy (E_a), optimum temperature and Q_{10} values were determined 40 °C, 3.957 kcal/mol, 2.335 kcal/mol and 1.85. The inhibition order of the metals was $\text{Pb}^{2+} > \text{Hg}^{2+} > \text{Co}^{2+} > \text{Cu}^{2+} > \text{Ag}^+ > \text{Fe}^{2+}$.

Discussion and Conclusion: The livestock such as goat has been consumed as an important food source (i.e., milk and milk products, meat and meat products) until now and will be consumed in the future. For this reason, it is necessary to examine the effects of heavy metal pollution on goat to protect the human health. Therefore, we purified CA enzyme from goat liver for the first time, and analyzed characteristic features. In addition, heavy metals had adverse effects on goat liver CA enzyme activity were investigated.

OP-85 THE DETECTION OF PESTICIDE RESIDUES IN VEGETABLES WITH SURFACE PLASMON RESONANCE SENSORS BASED ON MOLECULARLY IMPRINTING AND VERIFICATION STUDIES WITH LIQUID CHROMATOGRAPHY TANDEM MASS SPECTROMETRY (LC-MS/MS)

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The aim of this study is preparation of surface plasmon resonance (SPR) sensors using molecular imprinting method for determination dimethoate in cucumber. High selectivity, accuracy, sensitivity and lower detection limits of SPR sensors were carried out comparatively by LC-MS/MS.

In this study, N-metacryloyl-L-tryptophan methyl ester (MATrp), which was selected as a proper functional monomer to interact with a target molecule was characterized by FTIR-ATR. Dimethoate imprinted [poly(ethylenglycol dimethacrylate-N-methacryloyl-(L)-tryptophan methyl ester) (poly(EGDMA-MATrp))] nanofilm was attached to gold surfaces of SPR sensor chips. Furthermore, non-imprinted nanofilm was synthesized by the same method except without addition of dimethoate. SPR sensor chips were characterized by atomic force microscope (AFM), elipsometer, FTIR-ATR and contact angle measurements. Thickness measurements and AFM images show that almost all nanofilms are monolayered. The concentrations applied to the sensor were optimized by varying in the range 10-1000 ng/L. The limit of detection (LOD) was calculated 8.37 ng/L for SPR. Competitive adsorption experiments were performed to display selectivity of pesticide imprinted nanofilms and results show that imprinted nanofilm with a high selectivity and sensitivity for dimethoate. The comprehensive method was prepared by LC-MS/MS for qualitative and quantitative analysis of the dimethoate to perform validation. The LOD was calculated 16.92 ng/L ($R^2=0.999$) for LC-MS/MS. Dimethoate was detected 141.68 ± 3.11 ng/L for SPR sensor, 139.14 ± 2.13 ng/L for LC-MS/MS in cucumber. To determine binding accuracy SPR sensor systems at different concentrations, three different concentrations (10-100-1000 ng/L) were selected out of the standard solutions in the sensor systems. The samples at these concentrations were taken from the sensor systems before and after adsorption, which were then analyzed by LC-MS/MS.

As a conclusion; the sensor chips were found to have high selectivity, accuracy, sensitivity and lower detection limits obtained from comparison experiments of molecular imprinted SPR sensors to determine dimethoate in both aqueous solutions and vegetable samples by LC-MS/MS.

Keywords: Molecular imprinting, surface plasmon resonance, sensors, pesticide, LC-MS/MS.

**OP-86 THE EFFECT of *Celtis tournefortii* on TOTAL ANTIOXIDANT and OXIDANT STATUS
AGAINST CCl₄-INDUCED HEPATOTOXICITY**

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There are many toxic substances that have adverse effects on organisms in the environment and those substances threaten people health. However, nature gives a chance to eliminate these effects. Recent studies have shown that phytochemicals are beneficial for health due to their various metabolic effects. Therefore, the prophylactic and the therapeutic use of functional foods that constitute phytochemicals are nutraceutically becoming widespread. This study aims to investigate the effect of *Celtis tournefortii* (Ct) on total antioxidant status (TAS) and total oxidant status (TOS) against CCl₄-induced hepatotoxicity on rats' model.

In this research, 32 *Wistar albino* rats were divided into four groups (Control, CCl₄, CCl₄+Ct, and Ct groups) (n=8). CCl₄ was administrated single dose i.p 2 ml/kg bw to rats. Ct extract was administrated orally 10 mg/kg bw to rats every day for 28 days. Total phenolic and flavonoid content were analyzed in the extract. TAS and TOS were evaluated on liver tissue. The differences between the groups were analyzed using one-way ANOVA followed by the Tukey test.

The amounts of total phenolic and flavonoid content were determined 762.78 mg GAE/100g extract and 5462.67 mg QE/100g extract, respectively in extract obtained from *Celtis tournefortii* leaves. Liver TAS was found higher in the CCl₄+Ct administrated group compared to CCl₄ group (p<0.001). Liver TOS was found higher in the CCl₄ group compared to control group (p<0.001) and lower in the CCl₄+Ct group compared to CCl₄ group (p<0.05).

Celtis tournefortii might be used nutraceutically to provide oxidant/antioxidant balance in terms of its total phenolic and flavonoid content. The findings of study showed that *Celtis toumefortii* might indicate hepatoprotective effect since it decreased in Total Oxidant Status, which can be evaluated as an oxidative stress indicator, and increased in Total Antioxidant Status, which can be evaluated as a marker of antioxidant capacity.

OP-87 INVESTIGATION ON ADSORPTION PROPERTIES OF MESOPOROUS MCM-41 FOR GLYPHOSATE-IPA: AN ORGANOPHOSPHORUS HERBICIDE

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Glyphosate and its derivatives are the world's most widely used herbicides. It is nonselective and has been used to control a broad range of weed species. It kills plants by interfering with the synthesis of the aromatic aminoacids phenylalanine, tyrosine, and tryptophan[1]. Glyphosate adsorbs strongly to soil, and residues are expected to generally be immobile in soil. Glyphosate is readily degraded by soil microorganisms to aminomethylphosphonic acid (AMPA). Also, glyphosate and its derivatives are highly watersoluble and could be mobile in aquatic systems. *Glyp-IPA* is widely used herbicide in hazelnut gardens to kill weeds around the Black Sea Coast of Northeastern Turkey.

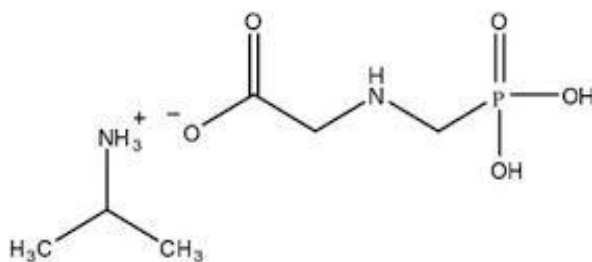


Figure 1. Structure of *Glyphosate-IPA* (*Glyp-ipa*)

The objective of this study, to investigate of adsorption of the *Glyphosate-IPA* by unmodified mesoporous silica MCM-41 and APTES modified MCM-41 (APTES-MCM-41) from water under ambient conditions. A preparation method was employed for ordered mesoporous silica nanoparticles, MCM-41 [2]. The maximum *glyphosate-ipa* uptake capacity for MCM-41 and APTES-MCM-41 were found to be about % 80 and % 95, respectively. The results also indicate that *glyphosate-ipa* herbicide can be absorbed by a type of ordered mesoporous silica nanoparticle MCM-41 and surface modified APTES-MCM-41.

Analyses were performed on a FT-IR spectrometer (Jasco Analytical Instruments FT/IR-6600), UV-vis spectrophotometer (Thermo Scientific Evolution Array Uv-Vis spectrophotometer), TGA (SII EXSTAR6000 TG/DTA6200) and MCM-41 was synthesized by temperature and pressure controlled reactor (BERGHOF-BR100).

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OP-88 THE EFFECTS OF CURCUMIN TO GLUTATHIONE PEROXIDASE (GSH), MALONDIALDEHYDE (MDA) AND ADVANCED PROTEIN OXIDATION (AOPP) LEVELS AND SUPEROXIDE DISMUTASE (SOD) AND CATALASE (CAT) ACTIVITIES IN THE EXPERIMENTAL LIVER INJURY IN SWISS ALBINO MICE -FORMED BY DIETHYLNITROSAMINE (DEN)

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The effects of curcumin (in 150 mg/kg ethanol, day) oral gavage application in the experimental liver cancer formed through diethylnitrosamine (DEN), Glutathione peroxidase (GSH) and malondialdehyde (MDA) levels in the liver tissue of Swiss Albino mice, advanced protein oxidation results (AOPP), superoxide dismutase (SOD) and catalase (CAT) activities are examined.

Test subjects are distributed into five groups (n=9): Tumor Control 1 , Tumor Control 2 , Curcumin Protective , Curcumin Treatment and Healthy Control Group . Curcumin has been given to the Curcumin Protective Group for 19 days (just 5 days before tumor injection) and to the Curcumin Treatment Group for 19 days in 150 mg/kg ethanol (24 hours after tumor injection). Oral gavage (daily 100 µl ethanol) has been given to Healthy control group for 19 days.

MDA levels of Curcumin Protective Group have significantly decreased ($p < 0.05$) ($p = 0.002$). MDA levels of Curcumin Treatment Group have also decreased; however, this decline is not statistically significant ($p > 0.05$) ($p = 0.128$). SOD activities increased significantly in both groups. It is observed as ($p < 0.05$) ($p = 0.001$) and ($p < 0.05$) ($p = 0.002$) respectively. GSH levels decreased in the both groups but it is not statistically significant. The CAT activities has significantly shown increased. We found in both groups respectively as ($p < 0.05$) ($p = 0.001$).

Conclusion, curcumin protective group application has decreased MDA and AOPP levels. Moreover, this application has significantly increased the activities of SOD and CAT. GSH levels is not necessarily affected. Curcumin Treatment Group application has shown an increased in the activities of SOD and CAT but has not necessarily affected the MDA and AOPP levels.

It has been found that curcumin uptake in the curcumin protective group has been relatively more active than in curcumin treatment group before the injury injection.

INTERNATIONAL CONGRESS OF HEALTH AND ENVIRONMENT

October 23-25, 2017

Adana-TURKEY

OP-89 DETERMINATION OF OUTDOOR DUST CONCENTRATIONS IN KONYA ORGANIZED INDUSTRIAL ZONE

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There are negative effects of air pollution on primarily human health, visibility, materials, plants and animal health. The effects of air pollution on human health result in the inhalation of high amounts of harmful substances in the atmosphere. In this study is aimed to evaluate dust exposure and offer to taking precautions for reducing of dust exposure in the dust exposed environments. At chosen points that are twenty-five (25) points from the Konya Organized Industrial zone were measured the outdoor dust concentrations. For the measurement of airborne particulate matter in the size of 0.1-10 µm which can be transmitted by human respiration will be used Thermo Andersen pDR-1000AN personal Data Ram (real time aerosol measuring device. In addition to the average and maximum dust measurements values such as the coordinates of the measurement points and the wind speed will be taken into account. All kind of surveying area data will combined with Geographic Information System for a healthy assessment the sources of the problems, to produce the solutions and to show the environmental dust measurement values on the maps.

Keywords: Outdoor dust measurement, Konya Organized Industrial Zone, GIS; Air Pollution

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OP-90 EFFICIENCY of POWER PLANTS with CARBON CAPTURE and STORAGE

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The impact of human activities on climate change has been growing by time. One of these activities that causes global warming is continuously increasing consumption of fossil fuels. It is certain that high energy demand has some negative effects. However ensuring the developments on carbon capture and storage (CCS) technologies in parallel with increase in the energy demand is critical for both sustainable environment and energy supply security.

There have been valuable technological researches on CCS aiming to struggle the climate change problem. CCS is a range of technologies that hold the promise of trapping up to 85-90 % of the carbon dioxide emissions from power plants. It involves collecting, transporting and finally storing the CO₂ so that it is not emitted to the atmosphere and contribute to climate change.

There are three main techniques; pre-combustion CCS process, post combustion process (with solvent), and oxyfuel burns techniques. These technics can mainly be used in insutrial facilities that emmits CO₂.

Fossil fuels are heavily preffered for energy production in spite of some adverse environmental impacts. Thus, it is important to focus on development and use of CCS in order to increase the production efficiency and eliminate some adverse impacts. In this study, application of CCS on fossil fueled power plants have been discussed in terms of both environmental and production efficiency.

Keywords: Energy efficiency, Climate change, Global warming, CCS technologies, sustainability

OP-91 RISK ANALYSIS OF HOSPITAL INFECTION; AHP AND TOPSIS METHOD

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Introduction: Uncovering the nature of health care can be a small mistake, which can have dangerous consequences for human life. At this point, risk management is not just a program to put in or receive at one time, but also to steer another place at the same time, avoiding the mistakes that are made. Risks in a hospital can be listed for business risks, operational risks, clinical risks, injury to guests and other persons, employees and occupational diseases, equipment and building risks, risks associated with chemical and nuclear waste, and environmental damage.

Many of the mathematical models are used for risk analysis by predicting these problems, two of which are Analytical Hierarchy Process (AHP), one of the models used as an analytical approach, and the TOPSIS, which is one of the multi-criteria decision making methods. In this study, we tried to determine the type of infection that caused the risk of infection and the death of patients in a hospital intensive care unit.

Material and Method: The risk of infection of 114 patients admitted to the intensive care unit of a hospital between 01.01.2015 and 31.12.2015 was analyzed with ahp and topsis methods.

Hospital infections are classified under 4 main headings as pneumonia, urinary tract infections (UTIs), blood circulation infections (sepsis), skin soft tissue infections, eye, ear nose throat (Eye-ENT) infection. In the AHP method, factors that affect decision points such as length of stay in hospital, response to treatment, need for multiple treatment, creation of additional health problems and mortality rates have been determined considering these four main topics. To determine which alternative or criterion is dominant, binary comparisons between alternatives (lowest level) and criteria (intermediate level) were made and binary comparison matrices were prepared. In doing so, a binary comparison scale is used.

Hospital infection acceptance criteria were defined as carrying any infectious microbe during admission to the hospital, having an infectious pattern developed at least 48-72 hours after admission.

Results: Weights of pneumonia, urinary system infection, blood circulation infection, skin soft tissue infection and eyelid nasal throat infection by AHP method were 0.268, 0.105, 0.473 and 0.105 respectively. Weight values of these points were found to be in terms of mortality rate 0.294, 0.139, 0.435, 0.094, 0.038, the treatment response values 0,06, 0,14, 0,06,0,27, 0,47, additional health problems 0.258, 0.178, 0.42, 0.1, 0.043, multiple treatment 0.263, 0.173, 0.417, 0.103, 0.044 According to these findings, infection tables were determined as

INTERNATIONAL CONGRESS OF HEALTH AND ENVIRONMENT

October 23-25, 2017

Adana-TURKEY

severe to moderate sepsis, pneumonia, urinary system infections, eye-ENT and soft tissue infections. Similar results were obtained with the TOPSIS method.

Conclusion: As a result of the data obtained, decision makers can use easily applicable and understandable methods such as AHP and TOPSIS to manage hospital infections in order to make accurate and reliable decisions.

**OP-92 SOCIO-ECONOMIC ENVIRONMENTAL RELATION IN ASBESTE-RELATED
MESOTHELIOMA**

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Introduction: Asbestos is a material that is used in many building materials, especially for materials to increase strength and insulation, and is also known as "Lethal Dust" due to its health problems. The structures we will encounter with asbestos are; asbestos cement sheets and panels, brakes and clutch plates, asbestos fabrics, all kinds of insulation materials, seals, fire hoses and blanks, boiler rooms, engine rooms, furnace chimneys, containing roofing materials, cement and water network lines.

Our country has imported at least 471.000 tons of asbestos in the last 30 years. Therefore, from the year 1983 until the year 2010, when asbestos use is strictly prohibited, 500.000 tons of asbestos has been or is used in Turkey. The asbestos theme can be grouped under two main headings: primary and secondary contact. In accordance with the article 11 of the Regulation on Health and Safety Measures in Asbestos Activities, published in the Official Newspaper dated 25.01.2013 and numbered 28539, the asbestos border value in working environments should be less than 0.1 fiber / cm³. Asbestosis may be cause gastrointestinal cancer, malignant mesothelioma. In this study, socio-economic environmental relation in asbeste-related mesothelioma had reviewed.

Materials and Methods: A total of 35 patients who applied to the clinic with different complaints between 2007-2017. Patients were review as retrospective according to age, gender, place of birth, occupation, exposure to asbestos, smoking history, family storytelling, diagnostic evaluation, treatment, and metastases.

Findings: Of the thirty - five patients 22 (62.9%) were male and 13 (37.1%) were female. The average age of the patients was 60.9 ± 10.2 , the mean age of the males was 61.05 ± 9.98 and the mean age of the females was 60.55 ± 11.17 . The first complaints of the patients were dyspnea, bloody sputum, chest and back pain according to the order of frequency. Sixty patients had hypertension, 3 patients had heart failure, 2 patients had tuberculosis, one had COPD and the other had diabetes. Considering the place where the patients are born, the area they live in and the work they do, it is noteworthy that almost all of them are exposed to asbestos due to primer and secondary. All patients underwent VATS and histopathologic examination was performed. Two of the patients

INTERNATIONAL CONGRESS OF HEALTH AND ENVIRONMENT

October 23-25, 2017

Adana-TURKEY

had biphasic, one had sarcomatous type, and the other had epitheloid type MPM. Pre -treatment clinical staging of patients diagnosed with MPM was performed using standard oncology FDG PET / CT imaging. According to this staging, patients were evaluated as Stage 1b (n:1), Stage 2 (n:7), Stage 3 (n:7), Stage 4 (n:20) respectively. Nineteen of them have distant organ metastasis. Patients die within 1-15 years. **Conclusion:** Asbestos is still a problem in the our country. The cumulative and secondary causes of asbestosis are important when considering the fact that the illness appears to be older and the rate of female patients is lower than that of the literature, considering that female patients are housewives. In addition, the diagnosis of late stage is another point of concern.

OP-93 ORGANOPHOSPHATE (DDVP) INTOXICATION AND NEUROMUSCULAR EFFECT

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Introduction: Given the importance of agriculture and widespread use of pesticides, intoxication due to organophosphate insecticides is common in Turkey. The knowledge about neuromuscular effects of organophosphate poisoning depends on limited publications and case reports. In this study, we aimed to determine the agent type, neuromuscular effects of organophosphate poisoning and the influence of these information in clinical approach and treatment modalities that will guide further studies to prevent complications, disability and death.

Materials and Methods: In this prospective study conducted for 2 years with the approval of ethical committee, 46 patients older than 15 years old who were admitted with cholinergic complaints with suspected organophosphate poisoning were evaluated. The demographic properties of the patients (age, gender), comorbidities, the route of exposure, the type of agent, serum pseudocholinesterase levels on admission, 6th and 12th hours were recorded. After proper primary assesment and treatment Electromyography, Visuel evoked potential, Somatosensory evoked potential were performed to evaluate the neuromuscular affect.

Results: Forty six patients, 27 (58,7%) females and 19 (41,3%) males were included in our study. Pseudocholinesterase levels were decreased in 35 patients. Electromyograhya including neuromuscular junction and nerve conduction velocities *studies were normal* in 43 patients. Electroneurography demonstrated distal motor polyneuropathy with segmental demyelination associated with axonal degeneration prominent in the distal parts of both lower extremities in 3 patient. Latancy and/or amplitude asymmetry were found in 4 (20%) patients in visuel evoked potential and 3 (15%) patients in somatosensory evoked potential.

Conclusion: As a result, it is aimed to emphasize and attract attention to the importance and characteristics of electrophysiological study and recognizing the neurological findings early in these three patients presented here, admitted because of organophosphate intoxication that is encountered frequently in developing countries. Moreover, another interesting feature was neuropathic findings accompanying pyramidal signs in both of the patients and improving of neuropathic findings while pyramidal signs' persisting during follow-up of the patient.

INTERNATIONAL CONGRESS OF HEALTH AND ENVIRONMENT

October 23-25, 2017

Adana-TURKEY

OP-94 ATTITUDES OF PREHOSPITAL STAFF TO AMBULANCE LIGHT AND SIREN USAGE

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Objective: The study was done descriptively in the center of Adana city to determine the attitudes of prehospital staff to ambulance lights and siren usage.

Methods: The data were collected prospectively by two data forms of “Presentation and Ambulance Usage Evaluation Form” and “Medical Criteries of Lighs and Siren Transportation”. The forms includes 16 and 35 questions respectively. The questionnaire was applied to 78 prehospital staff.

Results: The median age of the employees was $27,68 \pm 5,88$ years, using vehicles for $3,24 \pm 4.73$ years, 69,2% were women, 62,8% were associate degree graduates, 48,7% were emergency medical technicians, 87.2% of had driving license, 61.5% used cars, 80.8% did not use ambulance, 94.9% did not take traffic ticket during ambulance transportation. It was found that 48.7% of the employees uses lights and siren protocol, 89.7% thought the protocol should be used, 78.2% be aware of that they had a transition superiority and 52.6% of them found the ambulance driver faulty. 66,7% thought that they were influenced by the sirens, 15,39% were experiencing physiological problems because of the sirens. 79.5 % of the employees stated that the patients were affected by the sirens and 38.46% stated that the stress levels of the patients increased and psychological conditions were adversely affected. It was determined that 88.5% of the employees thought that the people in traffic were influenced by the sirens, 33.3% reported that the sirens causes panic and consequently accident.

Conclusion. It is determined that the majority of prehospital staff do not use the protocol for light and siren usage, but are aware of the negative effects of sirens and uses lights and siren in many cases unnecessarily.

Keywords: Prehospital staff, Ambulance, Lights and sirens

OP-95 NEW GENERATION OF SUBSTANCE ABUSE: SYNTHETIC CANNABINOIDS

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Synthetic cannabinoids are new generation of substance abuse, acts like natural cannabinoids (marihuana). They are first appeared in Europe in 2004 and in America in 2008. These compounds are usually sprayed to plants other than cannabis, dried and sold as herbal drugs. When these methods are discovered, synthetic cannabinoid producers have explored different methods to escape inspections; they have started to spray synthetic cannabinoids to the plants, dry and sell them as incense or room odor in grocery stores.

Synthetic cannabinoids, which have become a major problem in our country in recent years, are sold in Turkey by turcists under different names such as "Bonzai, dream, bombay blue, spice or K2". The clinical effects of bonzai are similar to the effects of marijuana, but bonzai may also result in more life threatening and longer symptoms. Some of these effects include agitation, tachycardia, sedation, psychosis, hypertension, prolongation of QT in the ECG, chest pain, vomiting, delirium, catatonia, seizures, respiratory depression and renal insufficiency.

More than 170 subtypes of synthetic cannabinoids have been produced by the year 2016. Because of its wide variety, it can not be detected in urine tests in the Emergency Room. Diagnosis is made by clinically and based upon a history. Management is supportive and determined by the presence and severity of clinical manifestations.

This review aims to discuss the synthetic cannabinoids that have become a major and important problem of the world and our country in recent years.

Keywords: Synthetic cannabinoids, Bonzai, Intoxication

OP-96 CHROMIUM PHYTOTOXICITY TEST OF METAL COATING WASTEWATERS

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Metals are deformed by some mechanisms such as oxidation and corrosion. In order to protect metals from deformation and effect of some agents, metal coating method may be used. Hot galvanizing, thermal spraying, electroplating and sherardizing are some of these methods and they depend on the type of metal which will be coated to protect to metal materials. Zinc, nickel, brass, chrome, gold, cadmium, copper, brass, and silver are the main materials used for metal coating process. Chromium may be the most deteriorating one within these metals because it has negative impacts on both human and other livings. It is found in the environment in many forms and mined in different countries. Especially chromium +6 is considered as carcinogenic and may lead to health problems such as allergic reactions, nose irritations and nosebleed, stomach ulcer, weakened immune system, genetic material alteration, stomach ulcer, kidney and liver function disorders and death. Therefore, metal coating wastewaters including high concentrations of chrome should be cleaned and treatment is necessary. In this study wastewater containing chrome produced by metal coating industry was analysed by using some plant species. In this study, the reaction of some plant species was investigated against different concentrations of chrome solution. Main plants used for the tests are *Lepidium sativum* and *Lemna minor*. Examining the negative effects of chrome which may harm plants and offering more accurate wastewater treatment techniques against chromium wastewater is possible with this method. There is significant relation between chromium concentration and toxic level on plant germination and growth rate. Moreover, variance analysis was applied to the results taken from experimental study in laboratory condition with selected level of chromium level and the significance importance was determined with our results.

Keywords: Metal Industry Wastewaters, Chromium, Lemna minor, Phytotoxicity Test

OP-97 A COMPARISON OF ACUTE TOXICITY OF CYPERMETHRIN ALONE AND SYNERGIZED WITH PIPERONYL BUTOXIDE TO THE MALE GUPPIES, (POECILIA RETICULATA PETERS, 1859)

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Pyrethroids are widely used in public health and agriculture because of their relative safety for humans, high insecticidal potency at low dosages and rapid knock-down effects and the limitations imposed on more toxic insecticides, such as chlorinated hydrocarbons, organophosphates and carbamates. But they are extremely toxic to fish and aquatic animals because of high sensitivity to them. Cypermethrin is a type II pyrethroids insecticide that is extremely toxic to fish even at very low concentration. It is present in most commercial products, some of which contain the synergist piperonyl butoxide (PBO). PBO increases the lethality of a particular dose of cypermethrin target species. The purpose of this study is to discuss and evaluate the acute toxicity of cypermethrin alone and synergized with PBO to the male guppies, *Poecilia reticulata* (Peters, 1859). Therefore, 96 h-LC₅₀ values of cypermethrin alone (CYP), PBO, and synergized cypermethrin with piperonyl butoxide (CYP:PBO) for male guppies were determined by static bioassay test. First, guppies were exposed to various concentrations (2.00, 4.00, 8.00, 16.00, 32.00, and 64.00 µg/l) of CYP and (1.00, 2.00, 4.00, 8.00, and 16.00 mg/l) PBO. The LC₅₀ values of CYP and PBO were found to be 3.13 µg/l, and 1.71 mg/l, respectively. Then, guppies were exposed to various concentrations (0.20, 0.39, 0.78, 1.57, and 3.13 µg/l) of CYP:PBO at 1:1. The LC₅₀ value of CYP:PBO was found to be 0.76 µg/l. The results showed that the mixture of CYP and PBO caused an extremely increase in the mortality and decreased LC₅₀ value almost four times more than CYP alone, for guppy.

**OP-98 ANTIOXIDANT EFFECT OF HONEY AND POLLEN ON LIPID PEROXIDATION IN
CADMIUM ADMINISTERED RATS**

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Cadmium is a toxic metal widely used in the industry threatening human health seriously with the cause of environmental pollution. The adverse effects of free radicals due to oxidative damage in the living organism after cadmium toxication can be reduced by antioxidants taken with different foods. The aim of this study was to determine the effects of orally administered honey and pollen on MDA, GSH, GSH-Px, CAT, vitamin A, vitamin E and β -carotene in Cd expose rats.

Animals were divided into 5 groups: Group 1: Control, Group 2: Cd administered, Group 3: Cd+honey, Group 4: Cd+polen, Group 5: Cd+honey+polen. The study was lasted for 6 weeks. At the end of the study, serum samples were collected and the levels of MDA, GSH, GSH-Px, CAT, vitamin A, vitamin E and β -carotene were measured.

After statistical analyses, while the differences of amount of plasma vitamin E and vitamin A, erythrocyte MDA, GSH-Px and CAT between control and Cd groups were statistically important, Plasma β -carotene and erythrocyte GSH levels were not. The differences of plasma vitamin E were important between Cd and Cd+honey, Cd and Cd+honey+pollen groups. It was not between Cd and Cd+pollen groups. While levels of plasma vitamin A were important between Cd and Cd+honey, Cd and Cd+pollen, Cd and Cd+honey+pollen groups, β -carotene was not in all groups mentioned above. Activities of erythrocyte GSH-Px were important between Cd and Cd+honey, Cd and Cd+honey+pollen but it was not between Cd and Cd+pollen groups. Activities of erythrocyte CAT, were important between Cd and Cd+honey, Cd and Cd+pollen, Cd and Cd+honey+pollen. While the levels of erythrocyte MDA, were important between Cd and Cd+honey, Cd and Cd+pollen, Cd and Cd+honey+pollen, levels of GSH in erythrocyte were not important in all groups.

Keywords: Antioxidant, Honey, Cadmium, Lipid Peroxidation, Pollen.

INTERNATIONAL CONGRESS OF HEALTH AND ENVIRONMENT

October 23-25, 2017

Adana-TURKEY

OP-99 ANTIOXIDANT EFFECT OF NIGELLA SATIVA SEED ON LIPID PEROXIDATION IN LEAD ADMINISTERED RATS

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Lead is a metal of high toxicity to the living organism. Since widely used in the industry, it brings about a significant part of the heavy metal pollution that threatens the environment we live in. Lead causes oxidative damage in the living organism. The adverse effects of free radicals based on the resulted damage can be reduced by antioxidants taken with different foods. The aim of this study is to determine the effects of orally administered Nigella Sativa seed on MDA, GSH, GSH-Px, CAT, vitamin A, vitamin E and β -carotene in lead exposed rats. In this study forty adult rats were used.

The rats were randomly divided into four groups and treated as follows: Group 1: Control; Group 2: Pb administered; Group 3: Pb + 2% Nigella sativa seed; Group 4: Lead + 5% Nigella sativa seed. The study was lasted for 6 weeks. At the end of the study, blood samples collected and determined levels of MDA, GSH, vitamin A, vitamin E and β -carotene and activities of GSH-Px, CAT.

MDA levels were found to be higher and GSH, CAT and vitamin E levels were found to be lower in Pb treated group than control group. MDA levels were found to be significantly lower Pb + 2% Nigella sativa seeds group compared with Pb treated group. MDA levels were found to be lower and GSH, CAT and vitamin E levels were found to be higher in Pb + 5% Nigella sativa seeds group when compared to Pb treated group GSH-Px activity and vitamin A and β -carotene levels were found no significant difference in among all groups.

Keywords: Antioxidation, Nigella sativa seed, Lead, Lipid Peroxidation, Rat.

OP-100 THE LEVEL OF HEAVY METALS IN BREAST MILK IN KARABUK PROVINCE

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Introduction and Purpose: Breast milk is an excellent food in terms of nutritional values and is affected by mother's feeding and environmental pollution. Therefore, elemental pollution in the mother's milk is a result of environmental conditions other than occupational exposure. The metallic residue resulting from food and environmental exposure threatens baby health rather than maternal health. The remains of the elements reach the baby through transplacental or by lactation. Most heavy metal determinations that may be present in the mother's milk are important. In this study, the levels of breast milk affected by heavy metals were investigated in Karabük province. Therefore, it is aimed to prove the importance of heavy metal residues on public health.

Method: In this study, 150 samples of breast milk collected in Karabük province and its vicinity, which is an industrial city, were analyzed in terms of Li, Be, Al, V, Cr, Co, Cu, Ga, As, Se, Rb, Sr, Ba, Tl and Bi metals. These determinations were made by ICP-MS.

Results: Almost all of the samples received had variable levels of elemental exposure. The quantities of Be, Cu, Cr, As and Cs were found to be higher than the references upper limit values in the study. In addition, elemental presence in maternal milk 15-30. With days 30-120. The difference between the days seems significant ($P < 0.05$). This means that the postpartum, from the colostrum, is transferred to the baby with a gradual decline in the elemental presence in the mother's milk and is of great importance for public health for pediatric development.

Discussion and Conclusion: Be, Cu, Cr, As and Cs elements were detected in the mother's milk above normal limits, which is estimated to be due to environmental pollution and drinking water. These values are higher than the values given by international organizations. There is no limit for Cs in terms of elemental exposure, but Cs has also been found in mother's milk. From the point of view of elemental residency, it has been concluded that taking individual and social precautions is necessary for public health.

Keywords: Breast-feeding, Breast milk, Element, Excretion by milk, Residue

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**OP-101 POTENTIAL HEALTH RISK of POLYCYCLIC AROMATIC HYDROCARBONS (PAHs) in
PM_{2.5} SAMPLES on DIFFERENT DEMOGRAPHICAL GROUPS**

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People spend majority of their time indoors, and could be exposed to indoor sources for long time periods. On the other hand, toxic and carcinogenic air pollutants such as organic compounds emitted from ambient sources were much more higher in urban atmosphere, which may have serious health outcomes in shorter time periods.

Fine particulate matter (PM_{2.5}) strongly affects air quality, climate and human health. They may deposit deeper into the alveoli and induce adverse health impacts. Among all of chemical organic components in PM_{2.5}, polycyclic aromatic hydrocarbons (PAHs) show the most consistent association with adverse health outcomes and therefore are of great public health concern. PAHs are ubiquitous in the atmosphere generated primarily during the incomplete combustion of organic materials. Many PAHs have toxic, mutagenic and/or carcinogenic properties.

In this study, 200 daily PM_{2.5} samples were collected by a high volume sampler in 2014, in a suburban location of Eskişehir, Turkey. Temporal variability of 16 priority PAHs on PM_{2.5} were characterized by gas chromatography-mass spectrometry. Carcinogenic risk assessments of PAHs were calculated for different scenarios, by the risk assessment model recommended by USEPA.

Maximum PM_{2.5} concentrations were observed in December ($72.3 \pm 18 \mu\text{g m}^{-3}$). Monthly concentrations varied between $26.3 \pm 8.3 \mu\text{g m}^{-3}$ (June) and $57.8 \pm 23.5 \mu\text{g m}^{-3}$ (February). Seasonal total PAH concentrations in winter and summer samples were found 89.6 ± 33.4 and $36.2 \pm 12.1 \text{ ng m}^{-3}$, respectively. Annual average concentration was calculated by $174.7 \pm 73.1 \text{ ng m}^{-3}$.

Carcinogenic risks of PAHs via inhalation were assessed for different scenarios. Health risk assessment was calculated based on inhalation of suspended particles through the mouth and nose. According to the International Agency for Research on Cancer (IARC), pollutants were divided into non-carcinogens and carcinogens. Among the evaluated compositions, Flu, Flt, Pyr, Ant were considered as non-carcinogenic, while DahA, BkF, BbF, IndP, Chr, BaA and BaP were carcinogenic.

**OP-102 HEALTH RISK ASSESSMENT OF SIZE SEGREGATED TOXIC METALS IN PM SAMPLES
COLLECTED FROM A THERMAL POWER PLANT AREA, KUTAHYA**

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Air pollution related health problems are major concern in developing countries. Kütahya suffers from serious air pollution problems related to thermal power plant and other industrial emissions with space heating. Although significant effort has been made to improve air quality, particulate matter (PM) concentrations could not decreased to desired levels in Kütahya.

Trace elements are important indicators of anthropogenic pollution. Understanding the atmospheric aerosol size distribution is very important to determine health effects of the metallic components, sources and transport mechanisms. High levels of toxic elements have been linked to adverse effects on human health. Also, As, Be, Cd, Co, Cr, Ni and Pb were defined as possible elements that can cause carcinogenic health effects by The International Agency for Research on Cancer (IARC).

In this study, size segregated atmospheric PM samples were collected in two different regions of Kütahya city center (urban), and Tavşanlı - Göbel district (rural) which are known to be affected by two thermal power plants and many other industries nearby. Daily size segregated particulate matter samples were collected during 10 days in summer and winter seasons in 2016, by a high volume air sampler (Thermo, USA) and 5 stage impactor system. Toxic elements in size segregated atmospheric PM samples were determined by using triple quadrupole ICP-MS (ICP-QQQ-MS) after microwave acid digestion.

Trace element concentrations were found to be higher in urban station samples. When the ELCRs (Excess Lifetime Cancer Risks) are examined, it has been seen that the cancer risk values are in the range between 1.7×10^{-5} (Co) and $>1 \times 10^{-9}$ (Pb). The results suggested that the risk levels for most of the PM bound metals were below acceptable risk levels to some extent, but As, Co and Cr may have a potential risks to the environment.

**OP-103 TOXIC EFFECTS OF THIACTOPRID AND D-TUBOCURARINE ON RANA RIDIBUNDA
GASTROCNEMIUS MUSCLE: CONTRACTILE PROPERTIES**

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Aim: In this study, we aimed to investigate the effects of thiacloprid and d-tubocurarine, a neonicotinoid insecticide and its antagonist, on the mechanical activity parameters of frog gastrocnemius muscle depending on the dose and duration.

Method: The study was composed of six experimental groups; 1×10^{-3} , 1×10^{-4} , 1×10^{-5} and 1×10^{-6} M thiacloprid, 1×10^{-5} M thiacloprid + 1×10^{-4} M d-tubocurarine and 1×10^{-6} M thiacloprid + 1×10^{-5} M d-tubocurarine combination. The agonist and antagonist effects were studied on an equal number of subjects in the experimental groups (N=8). Measurements were taken at 0th, 30th, 60th, 90th and 120th minutes and measurements taken at 0th minute were designated as the control value. Skeletal muscle mechanical activity recordings were obtained by BIOPAC MP 100 Acquisition system and contraction force, time and relaxation time were measured based on these recordings.

Result: According to the findings, thiacloprid significantly decreased the contraction force (35-97%), time (18-75%) and the relaxation time (33-71%) ($p < 0.05$) as compared to the control groups. Similarly, thiacloprid and d-tubocurarine mixture comparing to the control groups significantly decreased the contraction force (57-94%), time (23-59%) and the relaxation time (34-70%) ($p < 0.05$).

Discussion: There are studies showing that neonicotinoid insecticides reduce the contraction force, contraction and relaxation duration of skeletal muscles. It has also been shown that thiacloprid has a toxic effect 150 times more than the other insecticides of the neonicotinoid class. These results support our findings. The antagonist doses applied in our study has not seem to be a reduce effect of thiacloprid. Therefore, Therefore, different doses of agonist and antagonist combinations may be used to understand the effect of thiacloprid.

Conclusion: Significant reduction in contraction force, time and relaxation time of the gastrocnemius muscle after the thiacloprid and d-tubocurarine exposure suggests that this insecticide and its antagonist may have a toxic effect on skeletal muscles.

Keywords: Thiacloprid, d-tubocurarine, gastrocnemius, contraction force

**OP-104 THE APOPTOTIC EFFECTS OF WATER SOLUBLE FRACTIONS (WSF) OF CRUDE OIL
ON 24 HPF ZEBRAFISH EMBRYOS**

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Aquatic environment can seriously be affected by oil spill that can be occurred accidentally and/or naturally. Although the effects and the toxicity of water soluble fractions (WSF) of crude oil on aquatic organisms are the well-known facts that have confirmed by so many reports, and it is hypothesized that the effects of WSF were mediated by polycyclic aromatic hydrocarbons (PAHs); only a few investigation was performed to reveal the relationships between controlled cell death (apoptosis) and PAH-mediated toxicity in fish. Therefore, it was aimed to evaluate the effects of WSF of crude oil on apoptotic processes on zebrafish embryos.

Zebrafish eggs were collected within 3 hours of being laid and fertilized, and 24 hpf (hours post fertilization) embryos were exposed to three different concentrations (%5, %10 and %20) of WSF of crude oil for 24 and 96 hours. After specifically stained by acridine orange, whole embryos were examined by fluorescein microscopy. Apoptotic cells observed in different parts and tissues of embryos were calculated and compared to controls. Elevating occurrence of controlled cell death is seemed to be related to increasing concentration and duration.

**OP-105 EFFECTS OF PIPERONYL BUTOXIDE ON ACETYLCHOLINESTERASE INHIBITION
CAUSED BY FENTHION IN THE LIVER OF *Oreochromis niloticus***

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Piperonyl butoxide (PBO) is a synergist agent mostly added to pyrethroid insecticide formulations due to the ability of inhibiting cytochrome P450 (CYP 450) activity in insects. Piperonyl butoxide has a longer half-life and can accumulate in the environment therefore may affect the toxicity of other pesticides. Fenthion is an organophosphate insecticide and acaricide commonly used in agriculture and public health for controlling insect pests in the developing countries. The organophosphate pesticides exert their main toxicological effects through the irreversible inhibition of Acetylcholinesterase (AChE) enzyme in central nervous system. The toxic effects of organophosphate pesticides widely examined by *in vitro* and *in vivo* studies for the last 50 years, however effects of the synergist agents on the toxicity of these pesticides were not well investigated.

In this study, we clarified that the effects of piperonyl butoxide on Acetylcholinesterase inhibition effects of fenthion in the liver of *Oreochromis niloticus* used as a model organism. For this purpose, fish were exposed to $\frac{1}{4}$ of LC₅₀ value of fenthion (0.567 mg/L) and 0.5 mg/L piperonyl butoxide concentration for 24, 96 hours and 15 days. Liver tissues were dissected out on an ice plate at the end of the each exposure period. Acetylcholinesterase enzyme activities were analyzed in the liver by spectrophotometric method. Our results showed that fenthion significantly inhibited Acetylcholinesterase enzyme activities in the liver. Inhibition rate of Acetylcholinesterase enzyme activities were significantly decreased by piperonyl butoxide in all exposure times. Acetylcholinesterase inhibitory effect of fenthion was changed by piperonyl butoxide, this changes may be evaluated as increased toxicity of fenthion. It was concluded that use of the pesticide synergists in different pesticide formulations needs to be reconsidered due to affecting toxicity of other pesticides in non-target organisms, the longer half-life, and the accumulation in the environment.

OP-106 EFFECTS OF SILICA NANOPARTICLES ON AUDITORY SYSTEM

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Aim: Nanotechnology is defined as nanoscale materials and structures, usually in the range of 1 - 100 nm. Among the various types of nanoparticles (NPs), silica nanoparticles have become popular as drug delivery, cosmetic, textile and optical imaging agents. In spite of their widespread use, silica nanoparticles (SiO₂ NPs) toxicity and safety to mammalian and the environment have not been extensively investigated. In the present study, we aimed to investigate the effects of 20 nm sized Silicon dioxide (SiO₂) NPs on rat auditory system.

Material and Methods: In this study twelve male Wistar albino rats were used. The animals were divided into two groups as control and experimental group. The rats in the control group were injected with intratympanic 0.5 mL 0.9% saline for 7 days. The rats in the experimental group exposed to intratympanically 500 µg/mL/day (0.5 mL) dissolved SiO₂ nanoparticles in saline for 7 days. The hearing functions of all rats were evaluated using recordings of brain stem auditory evoked potentials (ABR) and distortion product otoacoustic emissions (DPOAE). Structural changes were determined using field emission scanning microscopy (FE-SEM) and light microscopy.

Results: From ABR recordings, the peak latencies (PLs), interpeak latencies (IPLs), and amplitudes were measured. In the experimental group, amplitude of II. and III. waves were decreased significantly with respect to control group. PLs of III. waves and IPLs of I-III waves in experimental group were longer compared to control group. In DPOAE evaluation, statistically significant differences were observed between groups in 4 kHz stimulus. In this frequency, DPOAE value in experimental group increased with respect to control group, significantly. In light microscopic and electron microscopic examination deformation in hair cells and decrease in number of hair cells were observed.

Discussion: It was thought that SiO₂ nanoparticles may cause toxic effects in auditory system by causing electrophysiological and histopathological changes.

Keywords: Nanoparticle, nano-toxicity, auditory system, brain-stem auditory-evoked potential, otoacoustic emission

**OP-107 AGRICULTURAL WORKERS OF PESTICIDE USE IN THE PROVINCE OF MERSIN
INVESTIGATION OF THE LEVEL OF AWARENESS ABOUT THE HEALTH AND
ENVIRONMENTAL EFFECTS**

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Introduction: Pesticides, which are used extensively in agricultural land, can cause significant pollution of both the soil and the water resources. Pesticides cause many systemic effects such as carcinogenic, neurotoxic, immunologic, cytotoxic effects on living organisms.

Aim : It was aimed to measure the level of consciousness of pesticide use of agricultural workers in Mersin province.

Material and Method;This is a cross-sectional-descriptive study whose sample was composed of 147 agricultural workers

Results: It was found that 72.8% of the workers were women, 29.9% were between the ages of 34-41, 48.3% were living in the village, 84.4% were married and 27.9% were primary school graduates. 46.3% of the workers are farming for 1-10 years and 61.2% are growing peaches. 54.4% of workers stated that they did not know about pesticide use, 52.4% of them took pesticide agricultural credit cooperatives and only looked at their price when they got 32%. 59.2% of the workers reported that they were exposed to poisoning during pesticide use, 24.5% felt burning and burning, and 21.8% said they had fatigue. 52% of the workers do not use protective clothing while pesticides are used and 61.9% think that pesticide does not adversely affect human health.

Conclusion: For pesticides in terms of environmental health issues has been proven by developed countries engaged in the work of the negative that can bring, but in developing countries such as Turkey, the work of creating awareness has just begun. Therefore, in terms of agricultural products to be consumed should be constantly checked environmental and health, high-risk, it is important to ban the use or limit the use of pesticides for agricultural workers and pesticide use to be provided with the training that can minimize the risks of increasing health and environmental awareness we believe.

**OP-108 INVESTIGATION OF THE EFFECTS OF COENZYME Q ON THE ACTIVITIES OF LIVER
FREE RADICAL SCAVENGING ENZYMES IN TAXOL GIVEN MICE**

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Background: Taxol is a cancer medication that interferes with the growth of cancer cells and slows their growth and spread in the body. Taxol significantly increased the formation of reactive oxygen species (ROS). Coenzyme Q₁₀, also known as ubiquinone, ubidecarenone, coenzyme Q, and abbreviated at times to CoQ₁₀, CoQ, or Q₁₀ is a coenzyme that is ubiquitous in the bodies of most animals.

In this study, the effects of antioxidant coenzyme Q were comparatively studied on the activities of the liver free radical scavenging enzymes in taxol given mice.

Objective / Purpose: In this study, we aimed to exhibit possible protective and therapeutic effects of coenzyme Q on the activities of radical scavenger enzymes in taxol given mice.

Material and Methods: 64 mice (*Mus musculus*) were used in the study. The mice were divided into the 4 groups as CoQ, Tax, CoQ+Tax and control groups. Each group was further subdivided into four subgroups according to time of sacrificing (4., 8., 12. and 24. hours). The animals were sacrificed via cervical dislocation. The liver samples were then exposed to homogenisation, sonication and centrifugation processes respectively. The supernatants obtained were used to measure total protein levels (by the Lowry method), malondialdehyde (MDA) (by Ohkawa et al., 1979), catalase (CAT) (by Lück, 1963), glutathione peroxidase (GSH-Px) (by Paglia and Valentine, 1967) activities.

Results: When the results were evaluated; in the case of injection of coenzyme Q individually, it was determined that coenzyme Q inhibited liver catalase and glutathione peroxidase activities and MDA levels were the lowest than any other group. In the case of injection of taxol and coenzyme Q together were inhibition effects in GSH-Px and CAT activities and MDA levels were higher than any other group in all hours. MDA is advisable to be used as indicator of reactive oxygen species (ROS) dependent tissue damage in various organs. Nevertheless, it was not found statistically significant ($p>0,05$).

Discussion: In this study, CAT and GSH-Px activities different according to control group. Taxol increased the formation of reactive oxygen species (ROS) in liver. But this difference not found statistically significant.

Conclusion: In conclusion, we can say that the usage of coenzyme Q has positive effects on the activities of liver free radical scavenging enzymes and on reducing of lipid peroxidation in liver.

Keywords: Coenzyme Q, Taxol, Radical Scavenging Enzymes

OP-109 DEVELOPMENTAL TOXICITY IN ZEBRAFISH EMBRYOS EXPOSED TO FONOFOS

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Aim: The aim of the study was to investigate the fonofos, an organophosphate insecticide, toxicity in early developing zebrafish.

Methodology: Zebrafish embryos were exposed to different concentrations of fonofos (0.25 to 50 mg/L) to determine the 96 hr median lethal concentration (LC₅₀). Based on the LC₅₀ value, embryos were treated with the sublethal concentrations of the chemical (0.25, 0.5, 1, 2 and 4 mg/L) for 96 hr. 48, 72 and 96 hpf embryos were monitored.

Results: The 96 hr LC₅₀ value of fonofos for zebrafish embryos was calculated as 7.06 mg/L. Sublethal effects of the insecticide were noted as delayed hatching, pericardial and yolk sac edema, red blood cell accumulation, decreased pigmentation, altered heart morphology and spinal curvature.

Conclusion: Fonofos affected the development of embryonic zebrafish. Due to the fact that zebrafish is a frequently used model in the studies of human health in the last few decades, fonofos should be considered as a serious threat for both aquatic environment and human embryos.

Keywords: Fonofos, organophosphate, insecticide, teratogenicity, zebrafish embryo, *Danio rerio*

OP- 110 EFFECTS OF THYMOL AND CARVACROL, CONSTITUENTS OF THYME (*Thymus vulgaris L.*) ON SERUM IRON IN *Oreochromis niloticus*

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Objective: Fish is an important source of nutrients for human health. Therefore aquaculture is increasing in importance. Since the World Health Organization (WHO) prohibited the use of antibiotics in animal feeds in 2006, the use of medicinal and aromatic plants increased. The aromatic and medicinal properties of the *Thymus* is one of the most popular plant in Turkey. The objective of this study was to determine the effects of thymol and carvacrol extracted from thyme on blood iron (Fe) levels of *Oreochromis niloticus*.

Design: *O. niloticus* is frequently used in the evaluation of environmental pollution, is also preferred as a model organism in experimental studies. Fish were fed with the extracts (1%, 3% and 10%) of thyme plant and were exposed to the active ingredient for 24 and 72 hours. Iron levels in fish blood were analyzed by spectrophotometric methods.

Results: Blood iron level increased from 13.1 ng/dL to 47.3 ng/dL under the effect of high dietary concentration of thyme. High concentrations of thyme are thought to increase the level of iron as a result of inhibiting erythrocyte formation by its toxic effect.

Conclusions: Iron plays an important role in respiration as well as, in electron transport by oxidation-reduction processes. The concentration of thyme showed significant relationship with iron levels. Moreover, these results show that if the right concentration is used it can be a good nutrient supply for a healthy life.

Keywords: Serum iron, *Thymus vulgaris*, *Oreochromis niloticus*

**OP-111 EFFECTS OF BISPEHOL A AND SALINITY ON CERATOPYLLUM DEMERSUM L., A
ROOTLESS AQUATIC MACROPHYTE**

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Bisphenol A (BPA) is an important industrial raw material. Because of its widespread use and increasing release into environment, BPA has become a new environmental pollutant. Another major environmental stress factor salinity adversely affected plant growth and development. So, the aim of the present study is to evaluate the physiological effects of single and combined applications of BPA and NaCl on the *Ceratopyllum demersum*, which were grown in a climate chamber. After plants were acclimatized in nutrient solution, they were supplied with control (without treatment), 17.2 mg/L BPA; 10 and 100 mM NaCl; and 17.2 mg/L BPA+10 mM NaCl and 17.2 mg/L BPA+100 mM NaCl. Photosynthetic pigment contents of the macrophyte were reduced by applications. When compared to control, there was an increase in total carbohydrate contents, except for 17.2 mg/L BPA application. The maximum total carbohydrate content was found in 17.2 mg/L BPA plus 100 mM NaCl combination. Contents of total phenolic and non-protein SH groups were increased by applications as well. The maximum increase was found for total phenolics and non-protein SH groups at 17.2 mg/L BPA. Protein contents, on the contrary to these, were decreased by all applications. The minimum protein content was found in 100 mM NaCl. Increases in contents of H₂O₂ and MDA were assumed to be resulted from provoked oxidative stress in the applications. According to correlation analysis of the study results, there were positive and significant relationships between Chl-a and Chl-a+b, chl-b and Chl-a+b, carotenoid and Chl-a+b, protein and Chl-b, protein and Chl-a+b, protein and carotenoid Chl-a+b, MDA and H₂O₂ contents. Besides there were negative and significant relationships between protein and H₂O₂, MDA and Chl-a, MDA and protein contents. Results showed that BPA and NaCl applications physiologically affected *C. demersum*.

OP-112 EFFECT OF LAMBDA-CYHALOTHRIN, A PYRETHROID PESTICIDE, ON TRIACYLGLYCEROL FRACTION IN THE LIVER OF OREOCHROMIS NILOTICUS.

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Introduction: Lambda-cyhalothrin is a pyrethroid insecticide. Pyrethroids are synthetic derivatives of pyrethrins, which are toxic components found in the flowers of the *Chrysanthemum cinerariaefolium* plant. Pyrethroid pesticides are more preferred than organochlorinated and organophosphate pesticides because of their strong insecticide properties and because they are often non-toxic to untargeted animals, especially mammals. Pyrethroids reach the aquatic life by direct application or by washing the medicines from the plant and soil surfaces with rain water (agricultural currents). The 96 hour LC50 values range from 0.98 µg / L to 360 µg / L for different fish species. The 96 hour LC50 value for *Oreochromis niloticus* of lambda cyhalothrin was reported to be 2,901 µg / L. In fish, the liver is the main organ for the biotransformation of organic pollutants and the excretion of harmful metals. In addition, lipid components are very susceptible to stress factors and environmental changes. Therefore, in the present study, it was aimed to determine the changes that can occur in the fatty acids in the triacylglycerol fraction of *O. Niloticus* exposed to the sublethal concentrations of Lambda-cyhalothrin.

Materials and Methods: The fish were provided from the pools of the Faculty of Fisheries of Çukurova University. Test groups were designated as lambda cyhalothrin exposure, acetone control and control groups. The lambda cyhalothrin concentration was prepared by dissolving in acetone and taking into account one-tenth of the LC50 values (0.29 µg / L Lambda cyhalothrin). In order to determine the changes that would occur in fatty acids, three fish were removed at the end of the 7th, 14th and 21st days of each of the experimental groups. Liver tissues from the sacrificed fish were homogenized in chloroform / methanol (2:1, v/v) solution. After the triacylglycerol fractions were obtained by thin layer chromatography (TLC), the fatty acids in the triacylglycerol were converted to fatty acid methyl esters. A gas chromatograph with an FID detector was used for the analysis of fatty acid methyl esters.

Results and Discussion: The most important fatty acids in the triacylglycerol (TG) in the liver tissue of the control fish were C16:0, C18:0, C18:1, C18:2n-6, C20: 4n-6 and C22:6n-3. On days 7, 14 and 21, irregular increases and decreases were recorded. The results were meaningful at P <0.05 level. In this study, the toxicity of lambda cyhalothrine on the liver triacylglycerol fatty acids of the *Oreochormis niloticus* was shown. In fresh water, even in small concentrations, the presence of lambda cyhalothrin may cause harmful effects on fish physiology and potentially impair survival in the natural environment. Therefore, control measures should be taken to prevent possible contamination of the water environment by such toxic pest insecticide.

Thank: This study is supported by the Dicle University Scientific Research Projects (16-EZF-001).

OP-113 A SOLUTION FOR URBAN RENEWAL WASTE PROBLEM: RECYCLED CONSTRUCTION MATERIALS

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The one of the biggest waste problem of metropolises is resulted from urban renewal activities which are the essential for safer and regular life standards. In our country, it is estimated that 500 million tones construction and demolition (C&D) wastes will be occur until 2023 as a result of demolition and reconstruction of older buildings which are located in earthquake risky areas within the scope of Urban Transformation Process since 2012. Nowadays, these generated C&D wastes has been usually stored at solid waste landfill sites without any utilization processes or used as only filling material for some other construction processes. However, there are more useful and healthier solutions for both of the citizens and nature.

To evaluate and utilize these C&D wastes into new construction materials production, a project was conducted by collaboration of Ministry of Environment and Urbanization of Turkish Republic and TUBITAK MRC Materials Institute. In this context, C&D wastes were obtained from ISTAC Inc. Waste Landfill, and then they were classified and characterized by physical and chemical methods. In laboratory studies, brick, concrete, cement and asphalt samples were produced by using different addition ratio of these C&D wastes as secondary raw material. Finally, based on the optimum laboratory results, industrial scale brick, concrete, cement and asphalt products were successfully manufactured with applying to commercial industrial production process in the IKIZLER Brick Factory, ISTON Inc. Concrete Facilities, AKCANSA Co. Cement Factory and ISFALT Inc. Asphalt Facilities, respectively. The all of the industrial scale products supplied the required technical properties according to their standard and limit values.

In conclusion, it was realized that C&D wastes could be utilized as an alternative secondary raw material for construction sector. These materials should not be evaluated as just a waste because of the capability of their reusable potentials.

Keywords: Asphalt, construction, demolition, brick, concrete, cement

**OP-114 WASTEWARE BENCHMARK INDICATORS FOR SOLID WASTE MANAGEMENT
ANALYSIS**

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Solid waste collection, treatment and disposal is a major challenge for developing cities. Uncontrolled solid waste is a serious public health issue as it causes the spread of diseases and blocked drains. The effectiveness of a city's solid waste system is used as a proxy indicator of good governance. A clean city is attractive to tourists and investors. In this regard, "Wasteaware Benchmarking Methodology" allows a city to judge its own performance regarding delivery of solid waste management services, provide information for decision-making on priorities for the limited funds available for service improvements, and monitor changes over time. This methodology emerged out of the United Nations Habitat efforts in the scope of the Integrated Sustainable Waste Management concept. The results of this methodology have been adopted by the United Nations in the concept of environment programme global waste management and population studies. This study provides detailed information on how to apply wasteaware indicators to any project which aims to (1) present a detail review of municipal solid waste and resource management of any city; (2) identify the activities of waste collection, treatment, controlled disposal, materials recovery and financial sustainability of the city; (3) provide an international platform for comparing the data for other cities and determine the level of development of a project region. When waste (material) flow models are built up, it could also visualise the current municipal waste management system and quantify all inputs and outputs in project region. This also provides detailed information on how to provide first quantitative estimations for informal sector recycling, which is currently unrecognised by many city municipalities.

Keywords: Recycling, Solid Waste Management, *Wasteaware Benchmark Indicators*

OP-115 SEPARATING AND RECYCLING OF SANLIURFA - HARRAN REFUGEE CAMP SOLID WASTES

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In this study; Sanliurfa-Harran refugee camp is aimed to produce new products by extracting plastic, metal, glass, paper and composite wastes separated from the source by producing less waste by separating at the source of solid waste. For this purpose, trainings were organized on the necessity of collecting organic wastes in separate waste containers with recyclable packaging wastes, benefits of recycling process and how they are processed.

At the beginning of the project it was deemed appropriate to train refugee ladies at the camp, thinking that solid wastes are mostly made up of kitchens. It is aimed to ensure the participation of a learner in every container house. This training was held in Harran Container City with 1766 ladies. Participation in the training here is on average 90%. In later stages, recycling training was given to the Syrian and Turkish teachers working in the camps. The purpose of teacher training; Because they are direct mates with the students, they give this knowledge to the students.

In the last stage; In the training camp placed in the camp, the children in these camps are encouraged to train and play with the games and visual feedback on the computers to reinforce and place the recycling consciousness. To this end, 3024 student recycling-based painting books and items, recycling-based reading books were distributed.

As a result of the trainings we gave to the people of Harran Container City, non-recyclable garbage was given to the normal garbage container, and waste such as recycled plastic, metal, glass, paper and composite was given to the blue garbage container. As a result, waste was reduced at the source and plastic, glass, metal, paper and composite waste were collected separately and the recovery material was collected in large quantities and these wastes were transported to the facilities related to the municipal trucks.

Keywords: Recycling Project, Recycling Education, Sanliurfa-Harran Container City.

**OP-116 SEPARATING AND RECYCLING OF SANLIURFA - VIRANSEHIR AND CEYLANPINAR
REFUGEE CAMPS SOLID WASTES**

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Purpose of the study, to minimize the waste production by separating the wastes at the source by the consumer. Collected at the source; plastic, metal, glass, paper and composite wastes are taken from here to obtain new products. In the first stage, these wastes are collected in different containers. In line with this aim, necessary trainings were carried out within the scope of the project called "Recycling Solid Waste" for the Syrian Refugees in the collective villages of Viransehir and Ceylanpinar Refugee Camps.

When wastes were thought to be mostly the result of consumption in houses, these trainings were first given to ladies playing active role at home. At least one person from each house hold participated in "Solid Waste Recycling" training and the project was started. In addition, the muhtars (Syrian-Turks), imams (Syrians-Turks), cleaning staff and especially the teachers who are effective in educating children were given trainings and distributed necessary materials. It is aimed to explain how the people can lead the people in recycling and to pass the recycling consciousness in to their daily lives. The trainings were arranged simultaneously in both camps, reaching 95% of the refugees living here.

When trainings were given, groups were sorted according to their priority order and care was taken to select the most efficient methods. In addition, children were given various trainings to raise awareness of waste recycling and colouring books, reading books and painting items were distributed in line with these trainings. In order to reinforce the trainings, he organized activities such as theater plays, computer games and picture contests. Approximately six months after the trainings were given, waste containers were placed in certain parts of the camps. In the last six months of the project, collecting and collecting the wastes separately as a result of training given by the public was observed and 80% of the training was found beneficial.

The public at the Viransehir and Ceylanpinar refugee camps, conscious of the resulting solid waste recycling training, have also been able to recycle paper, plastic, glass, metal, and composite wastes, which can be reused as non-recyclable wastes into waste containers, in the recycling containers. Paper, plastic, glass, metal and composite wastes collected by separation at the source are collected by municipality and taken to recycling facilities.

Keywords: Recycling Project, Viransehir Refugee Camp, Ceylanpinar Refugee Camp.

OP-117 E-WASTES, DISPOSAL AND ENVIRONMENTAL EFFECTS

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The waste of electrical and electronic equipment, in other words e-waste, is one of the most important problems of solid waste today. Today, with the development of technology, product variety is increasing day by day. When old devices are broken down, a serious electronic waste problem arises due to the preference for repair instead of repair and the number of users is increasing day by day. Heavy metals such as lead, mercury, phosphorus, barium, chromium cadmium in the contents of e-wastes are serious effects on human and environmental health if not disposed properly. In developed countries, the recycling of e-waste is costly and is being eliminated in undeveloped countries with cheap labour. It is worried that this situation will gradually turn the undeveloped countries into an electronic garbage. For this reason, legal regulations must be made in every country.

According to a study in 2014, the world's e-waste volume is at \$ 52 billion, but only 16% of this e-waste has been recovered appropriately. According to the United Nations, in 2017, the amount of e-waste in the world is 47.8 metric tons and the per person amount is 6.5 kg. This would be 49.8 metric tons for the year 2018 and 6.7 kg per person.

In this study, the effects of e-waste on human and environmental health will be determined. Measures to be taken to minimize them and applied technologies have been researched. In the world, studies on e-waste and legal regulations have been examined. In addition, studies on e-waste in Turkey and legal regulations have been researched.

Keywords: E-waste, Environmental Impact, Recycling.

OP-118 SOLID WASTES PRODUCED IN A TURKISH STATE HOSPITAL KITCHEN

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Objective: Environment is the most important resource in meeting people's basic need of nutrition and solid wastes are one of the most important reasons of its pollution. Identifying the kind and amount of waste produced in a hospital kitchen which provides collective catering services; understanding the scope of environmental and economic damage.

Methodology: The kind and amount of solid waste generated (produced) as a result of all food production and service operations have been calculated based on the catering registry for the menu of the 2015 January workdays (20 days). The waste generated (produced) in these same days has been collected separately according to their kinds (glass, paper-cardboard, composite, metal, organic, plastic, porcelain, wood); weighed and registered. The whole amount at the end of the study is acquired through adding up these daily amounts.

Findings: The amount of solid waste produced is determined as 7238.5 kg; 3317.3 kg of this is recyclable/renewable packaging waste and only 29.2% is collected. Furthermore, it is calculated that if 1132.8 kg of paper/cardboard waste produced is delivered to recycling facilities, 104.5 \$ revenue will be acquired. It is found that 21% or the organic waste collected can be used for compost production and through the altering of menus 148.9 kg of consumable food can be spared from becoming organic waste.

Conclusion: Getting the highest efficiency from natural resources used as raw material and energy, promotion of small amounts of waste production and the recovery and recycling of waste contributes to the economy and benefits the environment. It has been concluded that in collective catering systems, it would be meaningful to decrease waste production and effectively collect the wastes that are being produced, in order to solve the problem of wastage.

Keywords: Solid waste, Recycling, Compost, Hospital Kitchen.

INTERNATIONAL CONGRESS OF HEALTH AND ENVIRONMENT

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OP-119 THE EFFECTS OF 20 DAYS SWIMMING EXERCISES ON SOME PHYSICAL AND PHYSIOLOGICAL PARAMETERS IN IDEAL ENVIRONMENTAL CONDITIONS

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Objectives: The aim of this study is to investigate the effects of 20 day swimming exercises on some physical and physiological parameters in ideal environmental conditions.

Design: For an ideal indoor swimming pool, the water temperature should be 24 ° and the water temperature should be 26-28 °. Twenty-two volunteers participated to the research at a sports club by the sea level. 12 of the volunteers were women and 10 of the volunteers were men. Their average age was 33 ± 6.85 years, their average height was $166,07 \pm 9,87$ cm and their body weights were $71,98 \pm 11,95$ kg. Basic level swimming exercises were held for 7 weeks, 3 days for a week and 90 minutes for a day. Anthropometric measurements; body weights, heart rate, respiratory functions FVC and FEV1, oxygen saturation and flexibility were assessed before and after 7 weeks of basic swimming exercises applied to volunteers.

Results: At the end of 7 weeks of basic swimming exercises, there were statistically significant differences for the pre and post measurements of the body weight, heart rate, respiratory functions FVC and FEV1, oxygen saturation, and flexibility of the volunteers ($p < 0.05$).

No significant differences were found in any of the anthropometric length measurements ($p > 0.05$). Width measurements showed no significant difference in wrist, hand wrist, chest width, chest depth, hip, knee, ankle and foot ($p > 0.05$) while significant differences were found in shoulder measurements ($p < 0.05$). While there were significant differences in measurements of shoulder, arm, arm contraction, forearm, forearm contraction, chest, chest inspiration, chest expiration and calf measurements ($p < 0.05$), there was no statistically significant difference in measurements of one shoulder, abdomen, hip and thigh ($p > 0.05$).

Conclusion: As a result, it can be said that the 7-weeks basic swimming exercises in adults improved the physical, physiological and strength values.

**OP-120 EXAMINING THE RECOVERY POSSIBILITIES OF CONSTRUCTION AND DEMOLITION
WASTES IN TURKEY**

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The concept of construction and demolition (C&D) waste, which is generally defined as materials arising from excavation, construction, renovation/refurbishment, demolition and other construction-related activities, has received much attention from researchers worldwide since the beginning of the 70s. Although C&D waste management issues have been dealt with in various dimensions on the international platform, it is new in Turkey. The management of C&D wastes has become very important for Turkey in recent years. This is because most C&D wastes are generated because of the potential risk of earthquakes and urban transformation projects, which have led to the destruction of buildings before the end of their lives. In order to cope with these wastes, they should be managed in the hierarchy, with waste prevention/reduction being the first priority, followed by recovery. Disposal should only be considered as a last resort.

Recovery plays an important role in C&D waste management hierarchy because there are many environmental and economic benefits associated with it. Such benefits include the protection of raw materials and the reduction of pollution. For this reason, this study seeks to determine the types of C&D wastes that are frequently generated by construction sector activities in Turkey and to examine their recovery possibilities.

Recovering C&D waste can be possible through reusing and recycling. As the recovery methods of C&D wastes vary according to the various properties of building materials and elements, the amount and level of benefits to be provided will vary. For this reason, it is important to determine the methodology that is most beneficial by investigating the possibilities of recovering materials and elements. In this context, the types of C&D waste that frequently occur during the building life cycle in Turkey have been determined. Later on, recovering (reuse, recycle) possibilities for these wastes and usage areas after recovery will be investigated. Present applications for Turkey have been put forward.

Considering the ecological and economic benefits to be gained by increasing the level of consciousness and applications about recovering of C&D waste, this study is considered to make a significant contribution to the literature and application field.

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OP-121 HYDROELECTRIC POWER PLANTS ON MURAT RIVER, TURKEY

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Objective: With this report, it was aimed to examine the potential impact on fish of some dams, tried to put forward solutions.

Methods: In this presentation, visual materials and oral interviews from General Directorate of State Hydraulic Works (DSI) The 9th Regional Directorate Plan and Etude Unit were used.

Results and Discussion: Depending on the development of industrialization and improvement of society today energy consumption is increasing day by day in nowadays. As well as, establishment of thermal centrals, wind and wave energy and nuclear centrals, building small-scale hydroelectric power plant on the river and regulatory activity have gained pace in recent years. Murat River is one of the main rivers feeding Keban Dam Lake. The River borns from Ağrı and Van provinces' borders (north of the Lake Van), moves on towards west through Muş, Bingöl, and Elazığ provinces and then pours into Keban Dam Lake. Murat River has got two active dams that were built by the private sector on the river. These dams are, from west to east, respectively, Beyhan I and Alpaslan I dams. No fish passages were found in these dams. Other than these, the construction of the dams of Beyhan II, Aşağı Kaleköy, Yukarı Kaleköy and Alpaslan II is going on. Also, there are negative effects of these dams on spawning migration of some cyprinidae species (*Capoeta umbla*, *Capoeta trutta*, *Luciobarbus esocinus*, *Luciobarbus xanthopterus* and *Luciobarbus mystaceus*) living in Murat River and Keban Dam Lake.

INTERNATIONAL CONGRESS OF HEALTH AND ENVIRONMENT

October 23-25, 2017

Adana-TURKEY

OP-122 DETECTED EXOTIC AND INVASIVE SPECIES IN SUSUZ AND AYGIR LAKES (KARS), CILDIR AND AKTAS LAKES (ARDAHAN)

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Introduction: Aygır, Çıldır and Aktaş are lakes with volcanic character (1,2,3,4). About 20 years before, a fishery cooperative has been established for these lakes, which were used to market a large number of natural and indigenous fish species to the domestic market, especially the Çıldır lake (5,6,7,8). Population of these highly precious, natural and indigenous species have rapidly decreased in recent years due to breeding of exotic and invasive species, which is the main subject of this report. Nowadays these native fish are found very deep in the lake, few in number and small in size. These species are identified in this important wetland area within Kars and Ardahan city boundaries. They are exotic and invasive species and it is unknown that breeding was made by whom, when, how and why. This invasive species in reported lakes, have led to significant decrease on natural fish populations.

Materials and Methods: In 2013-2014, The local fisherman of Aygır, Çıldır and Aktaş lakes were told to collect fish samples every three months to determine the fish fauna of the lake. Collected fish samples were identified according to the literature.

Results: This study was made on Susuz and Aygır Lakes (Kars), Cildir and Aktas Lakes (Ardahan) under the projects of Ministry of Forest and Water Works. In this investigation, which was made in Aygır and Cali Lake, we detected the presence of Prussian Carp (*Carassius Gibelio*) and Turkish Crayfish (*Astacus Leptodactylus*) only in Aygır Lake of summer 2013 and it was also detected from another investigation in both Cildir and Aktas Lakes of summer 2014.

Discussion: In order to determine the biodiversity of the lake and its surroundings; the field work was performed in Aygır, Çıldır and Aktaş lakes, the Israeli Carp and Turkish Crayfish were caught more than other native and natural fish species. According to the statements of the literature and local people, native fish species have decreased rapidly but the populations of Israeli Carp and Turkish Crayfish have increased rapidly (5,6,7). Israeli Carp adults causing natural populations to decrease by eating eggs and larvae of other fish species. Also Turkish Crayfish has been found to cause a decrease in the density of natural populations as they consume underwater plants and fish eggs in the lake ecosystem. The degradation of the natural structure of the ecosystem and of its natural populations will adversely affect the environment. After working in this important wetland habitats, it can be concluded that these exotic and invasive species (*Carassius gibelio* and *Astacus leptodactylus*) are destroying species and should be removed from the lakes.

Keywords: Kars, Ardahan, Aygır Lake, Çıldır Lake, Aktas Lake, Biodiversity, Exotic Species, Invasive Species, Ministry of Forest and Water Works.

INTERNATIONAL CONGRESS OF HEALTH AND ENVIRONMENT

October 23-25, 2017

Adana-TURKEY

OP-123 THE ROLE OF ENVIRONMENT IN PROVIDING FOOD SAFETY

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Today, safety of food for human health is considered to be an international problem all around the world. All problems that people encounter about food are gathered under the titles of food security and food safety. All operations applied from production to consumption of food might include physical, chemical and biological threats if an appropriate production system is not established considering food quality, and they might affect human health negatively.

Microbial threats rank first among food-sourced risks and they vary depending on various factors. Many of food items constitute an appropriate environment for many microorganism groups including most of pathogens to reproduce and develop. These microorganisms which reproduce and develop in food items may create considerable danger for public health and they may cause economic losses. Particularly, products of animal origin form a convenient environment for many causes of diseases to develop. In parallel with the development in food industry, faster increase in urban population than rural population, developments in national and international trade make spread of diseases contaminating through food items to larger public communities easier. In developed countries, most of the animal diseases have been brought under control, methods of production, distribution and control of food items have been improved and correspondingly decreases have been provided in the rates of such animal origin diseases. In underdeveloped and developing countries, food items maintain their importance in terms of public health. Food-borne pathogenic factors arise from animals, people and environment. Insects, mice, dust, air, stool in an environment play a significant role in the contamination of these factors. Besides, water is another important cause of contaminations.

In general, food safety is a concurrent subject scope including industry, agriculture, trade, tourism and environment. Providing food safety requires common responsibility of all sectors in this regard. In this notice, the role and the significance of environment in maintaining food safety is going to be evaluated in the light of recent information in the related literature.

**OP-124 INVESTIGATION OF THE HEAVY METAL CONTENT OF BEANS OFFERED FOR SALE
IN KARAMAN PROVINCE**

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Use of chemical fertilizers and pest control agents, are the primary source of heavy metal contamination in agricultural soils (1). Food products such as legumes, fruits and herbs accumulate heavy metals from the soil, water or air. They are being grown in the contaminated soil, most of the time unknowingly, toxic heavy metals from these polluted soils may accumulate in these food stuffs grown in them (especially under ground part) thereby entering into the human food chain. Legumes are an important part of the human healthy. In this study, the heavy metals in beans offered for sale in Karaman were investigated. The samples were prepared to be 2 parallel for each sample and were solutioned by wet burning method. For this purpose, one gram of the powdered sample washed and dried in a suitable manner is precisely weighed 16 ml HNO₃ and 4 ml HClO₄ are added to it and the solution is slowly heated in the drawer for about 5-6 hours. The heating process close to the end of the acids is cut off and the solution sare cooled. Then 5 ml H₂O₂ was added and heating was continued until clear liquid was obtained. Cooling solutions were filtered through blue b and fitler paper and 10 ml of the obtained solutions were mixed with distilled water to prepare the analyzed. Concentrations of Co, Ni, Cr, Cu, Zn, Pb, Mn, Mg, Fe and Ca were determined by FAAS instrument. According to the results, Ni, Cr, Pb, Mn, Fe and Ca elements were found to be above the limit values in Europe and Turkey. In the prevention of heavy metal pollution sources of contamination must be well defined, these resources must be eliminated and environmental exposure with traceability of hazard conditions must be ensured.

References:

1. Geiger, G., Federer, P. ve Sticher, H., 1993. "Reclamation of Heavy Metal Contaminated Soils: Field Studies and Germination Experiments", Journal of Enviromental Quality, 22:(1), 201-207.

OP-125 DOES GENDER PLAY A ROLE ON THE EFFECT OF MONOSODIUM L-GLUTAMATE ON ANXIETY, REFERENCE AND WORKING MEMORY AND ADDICTION IN RATS?

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Aim: Monosodium glutamate (MSG) is a flavor enhancer commonly used in foods. In previous studies sex related differences of the effects of MSG on behavior change, addiction, reference and working memory is insufficient. Therefore, in this study, we aimed to evaluate the gender differences of the effect of MSG on anxiety, reference and working memory, addictive behavior, in male and female rats consuming MSG over a long period of time.

Method: In the experimental group Wistar albino male (n = 10) and female (n = 10) rats after a period of separation from their mother. MSG was added to their drinking water (tap water) and they were fed for 12 weeks. The animals were taken into cages of 5 animals in each cage and were weighed two times per week. Based on total weight 250 mg / kg MSG /0.5 L drinking water was provided to the animals to take. Rats in the control group received only tap water. After 12 weeks, the behavioral parameters (number of line crossings as locomotor activity, number of rear as evaluation behaviour) of the rats was evaluated in an open field apparatus. Addictive behaviors were evaluated in the conditioned place preference test. Elevated T-maze was used to observe anxiety. Reference and working memory was evaluated by the 3 panel runway test.

Results: In MSG treated groups the number of line crossings (in male: 69.3 ± 5.27 , in female: 67.6 ± 6.46) were significantly increase ($p < 0.05$) compared to the control group (in male: 57.5 ± 6.83 , in female: 41.4 ± 9.92) but there was no significant difference between the two sexes. In the elevated T-maze test conditioned and unconditioned fear was evaluated, MSG group compared to non MSG group developed anxiety ($p < 0.05$) but there was no significant difference between the sexes ($p > 0.05$). Reference and working memory evaluated by 3 panel runway test in the MSG group was elongated compared to the non MSG group meaning the working and reference memory was impaired.

Discussion and Conclusions: 12 weeks of consumption of MSG added to drinking water of rats caused many adverse effects. Gender does not play an important role in the effects of MSG in rats. In the light of our findings we would suggest that consumption and effects of MSG be evaluated in anxiety and depression models of male and female rats to determine the differences in the sexes.

This work was supported project by **Erciyes University Research Fund No. TYL-2014-5462.**

OP-126 A STUDY ON THE USE OF LIQUIDAMBAR ORIENTALIS RESIN AS A NATURAL COATING

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Findings: The obtained 2.5%, 5, 7.5, 10, 12.5, 25% Thyme water-GAR mixture was tested on nuts, chestnuts, fresh pistachios, almonds. This process was carried out by spreading-mixing, simply spraying, and treated by immersion. In the process, it was observed whether there was a homogeneous distribution on the surface, sufficient adhesive strength and changes in organoleptic properties. The samples taken from the application were treated with two kinds of powdered sauces from the sauces used in the production of nuts.

After the dipping, spreading-stirring and spraying methods, the nuts were dried at 50 ° C for one hour. After drying, it was left to cool for one hour. The change in flavor, taste, sauce holding ability and taste was evaluated for organoleptic.

Discussion And Conclusion: Many scientific publications on food packaging, coatings and edible coating. But thyme water-resin mixture is not a tried-and-true matter for the sauce holder of foodstuffs.

In this study, it was observed that the mixture of 5% thyme -GAR could hold sufficient and effective sauce for the nuts that were tried. It has been observed that this concentration does not cause a change in consistency, structure, taste, flavor and appearance. But, it has been observed that a small amount of thyme smell can be felt. This mixture is completely natural and it is important for the formation of the natural intermediate use conception. Moreover it is important to develop natural protective coatings in terms of public health.

**OP-127 EFFECTS ON THE SERUM HOMOCYSTEINE LEVELS OF NIGELLA SATIVA OIL IN
METABOLIC SYNDROME RATS**

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Objectives: In this study, we had the purpose to contribute to the literature with the data to be obtained from investigating the mechanism of the reason of increase of the development and the prevalence of the Nigella sativa oil (NSO) metabolic syndrome (MS) homocysteine levels, having a metabolic syndrome formed in rats with a fructose diet.

Methods: In the study, 21 male Sprague-Dawley rats about weight of 200-240 g have been used. The rats were separated to 3 groups, each of which has 7 rats. Group1; control group (10 weeks), group 2; MS with fructose (10 weeks), group3; given NSO after MS progress (10+4 week) in created.

Results: The increase in serum homocysteine level in group 2 after MS compared with the control group was statistically significantly decreased in group 3 compared to MS group by Nigella sativa oil application ($p < 0,05$). There was no significant statistical difference between group 1 and group 3 ($p > 0,05$).

Discussion: Consequently, NSO have a positive effect the serum homocysteine which can be useful to in the patients with MS and it looks like a promising option has been concluded.

Keywords: Metabolic syndrome, Nigella sativa oil, homocysteine

OP-128 THE EFFECT OF NIGELLA SATIVA OIL ON SERUM LIVER ENZYMES IN THE RAT INDUCED METABOLIC SYNDROME

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Objectives: In this study, we had the purpose to contribute to the literature with the data to be obtained from investigating the mechanism of the reason of increase of the development and the prevalence of the Nigella sativa oil metabolic syndrome, on liver enzymes levels, having a metabolic syndrome formed in rats with a fructose diet.

Methods: In the study, 21 male Sprague-Dawley rats about weight of 200-240 g have been used. The rats were separated to 3 groups, each of which has 7 rats. Group1; control group (10 weeks), group 2; metabolic syndrome with fructose (10 weeks), group 3; given Nigella sativa oil after metabolic syndrome progress (10+4 week) in created. Rats were decapitated after the study. Blood samples were taken, AST, ALT, Amilaz, T. Protein and Albumin, were measured in the serum and the effects of Nigella sativa oil on these parameters were examined.

Results: Serum ALT, T. Protein and Albumin levels measuring were compared to the control group found statistically significantly higher and the formation of metabolic syndrome, that we gave the Nigella sativa oil group serum ALT, T. Protein and Albumin levels compared to the group levels significantly different were lower ($P<0,05$). Formation of metabolic syndrome, that we gave the Nigella sativa oil group AST and Amylase levels were lower, but the decrease did not have a statistical significance ($p>0,05$). Metabolic syndrome group AST and Amylase levels were compared to the control group higher, but the decrease did not have a statistical significance ($p>0,05$). According to data obtained as a result of the study, Mann Whitney-U test and Kruskal Wallis the value of $p<0,05$ was used as a level of statistical significance in pair wise comparisons between the groups.

Discussion: Consequently, Nigella sativa oil have a positive effect the serum AST, ALT, Amilaz, T. Protein and Albumin which can be useful to in the patients with metabolic syndrome and it looks like a promising option has been concluded.

Keywords: Aspartate aminotransferase, Alanine aminotransferase, Metabolic syndrome, Nigella sativa oil.

**OP-129 MODELLING THE ADVERSE HEALTH EFFECTS OF ROAD TRAFFIC NOISE: A
CASE STUDY IN ADANA, BULENT ANGIN BOULEVARD**

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Environmental noise is a well-known source of pollution in urban areas that can be described as an undesirable sound. Main sources of noise in urban areas include road, rail, and air traffic, industries, construction and public work and the neighborhood. Not all noise can be called noise pollution. In the context of main sources of noise in urban areas, traffic noise has become the most serious and common type of noise pollution.

According to the findings of the World Health Organization (WHO), noise is the second largest environmental cause of health problems, just after the impact of air quality. The adverse effects of noise pollution on human health have been categorized under 6 groups by WHO: hearing impairment, sleep disturbance, social behavior (annoyance, anger, depression etc.), cognitive performance, cardiovascular and psychophysiological risks and work performance.

Much of the urban populations are vulnerable to the adverse health effects of traffic noise. Taking into account the adverse effects of noise, the European Union (EU) has initiated strategic noise mapping. Urban areas near busy road systems are usually selected for initial implementation of mapping systems. On its path to EU membership process, Turkey commenced pilot studies for noise mapping. These pilot studies have particularly been conducted on the roads dealing with heavy traffic.

Bulent Angin Boulevard, which is the subject of the research, is one of the roads with heavy traffic in Adana. Because Bulent Angin Boulevard is the basic transportation line connecting the northern Adana known as New Adana with the city center and providing access to Çukurova University and Balcalı Research Hospital. Also the presence of densely populated settlements and also a number of educational institutions along the boulevard leads to a high and sensitive population exposed to noise. In view of the above, present research aims to model adverse health effects of road traffic noise induced by a part of Bulent Angin Boulevard.

The research was executed in the pilot area extending to the 1 121 m route of Bulent Angin Boulevard and 207,09 ha area covering 800 m east and 800 m west of this route. In line with the aim of the research, the first step has been to map Bulent Angin Boulevard-induced environmental noise during daytime (07:⁰⁰-19:⁰⁰), evening time (19:⁰⁰-23:⁰⁰) and night time (23:⁰⁰-07:⁰⁰) by employing SoundPLAN 7.3 software. After that, traffic-induced noise distribution maps were analyzed by threshold values stipulated by the Regulation on

INTERNATIONAL CONGRESS OF HEALTH AND ENVIRONMENT

October 23-25, 2017

Adana-TURKEY

Environmental Noise Assessment and Management that is compliance with the European Union Directive on Environmental Noise (2002/49/EC) and noise limits identified by WHO.

As a result of the study, the adverse health effects of the road traffic noise in the research area were determined by 11 noise distribution maps. Three of these 11 maps were created according to Regulation on Environmental Noise Assessment and Management; eight of them were created according to noise limits identified by WHO (1 map for cognitive performance, 1 map for sleep disturbance, 3 maps for social behavior (annoyance, anger, depression etc) and 3 maps for cardiovascular and psychophysiological risks).

Keywords: Adana, Noise mapping, Noise pollution

OP-130 THE EVALUTION OF NOISE LEVELS IN INTENSIVE CARE UNITS OF HOSPITAL

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Health is the person's physical, mental and social well-being (WHO). Noise, which is the risk for human health is briefly defined as undesirable sound. Noise is a stress factor even for healthy people, is even more important in the hospitals especially in intensive care units. In intensive care units (ICU), there are many noise sources including central oxygen-dry air system, patient monitor, infusion pump device, ventilator, nutrition device, perfusor device, patient heating-cooling devices.

In patients who are exposed to noise in intensive care units; many problems such as heart rate, metabolism and oxygen consumption, anxiety and pain perception, increased corticosteroid release and decreased respiratory function are common. Furthermore sleep disturbance, stress and intensive care psychosis is another important problem related to noise in intensive care unit patients. The World Health Organisation (WHO) Guidelines for Community Noise includes advice on noise levels in hospitals should not exceed 35 dBA L_{Aeq} for areas where patients are treated or observed, with a corresponding L_{Amax} of 40 dBA. Environmental Protection Agency 'Environmental Protection Agency' (EPA) guidelines recommend that the highest sound level should be 45 dB in order to provide a comfortable environment that provides 100% intelligibility within the room, and it is stated that people tend to raise their sound in situations exceeding 45-50 dB.

In this study, the sound level was evaluated in intensive care units of a University Hospital. SVANTEK 955, Type 1 noise meter was used. The measurement results were found minimum sound level of 42.6-55.4 dBA, average sound level of 54.5-66.6 dBA, maximum sound level of 70.2-83.8 dBA. The sound levels in the intensive care units were above the limit values. It was recommended that employees, patients and their relatives must educate about noise. In addition, sound insulation on the walls, floors and ceilings of the building and reducing the setting of the devices such as alarms and telephones or changing their location or producing alternative solutions in order to reduce the noise level to the minimum can be carried out.

Keywords: Noise, Intensive Care Units, Health

OP-131 THE EFFECT OF SOUND WAVES ON SOME FRUIT QUALITY CHARACTERISTICS OF TOMATO

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The environmental factors have a great effect upon the physiologic and biochemical processes that provide the plants to grow, survive, grow old, reproduce, and spread. The stress leads to metabolic and physiologic changes in plants that affect growth and development directly. Sound stresses included in abiotic stress factors created by the sound areas in which sound waves form affect growth and development of plants as an alternative mechanic stress. For that purpose, 10-week-old tomato plants were used in this experiment. The tomato plants were exposed to 3 different frequency values as 600 HZ sound wave in the first week, 1240 HZ in the second week and 1600 Hz sound waves in the third week at 90 dB adjusted as constantly. At the end of experiment, lycopene, c vitamin, total sugar, total acid, total phenol were analyzed and pH and Brix were measured in tomato fruits. As result, along with the increase at frequency value at a constant sound intensity level, some fruit parameters increased their lycopene, c vitamin, total sugar, total acid, total phenol when they were exposed to stress. It was determined that all parameters increased at 1600 Hz for tomato fruits.

Keywords: Sound wave, dB, mechanic stress, tomato, fruit quality

**OP-132 STUDY OF FOLLOWING RIDGE TRANSPARENT REMOVALS WITH SATELLITE DATA
AND RESEARCH ON THE EFFECTS OF HEALTH: ISTANBUL SAMPLE**

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In recent years, as the amount of gas released in the atmosphere increases due to the effect of global warming and climate change, meteorological conditions are changing and it is known that the phenomena of powder transport between continents are increasing in many places. The earth is covered with deserts, about one child. 20 million tonnes of dust are transported from the deserts of Syria, Iran and the Arabian Peninsula in the immediate vicinity of our country, most notably in the Sahara. This transport, especially in the transition season, Spring and Autumn, is a natural process that reveals the event. It causes environmental interactions in the environment where desert dust also precipitates after transport. It also poses a number of threats to the environment, such as air quality, human health and soil impact.

Particulate matter in the air is one of the major pollutants affecting human health. The particle size in the air is directly related to the negative effect on health. As the particle diameter decreases, the adverse effects of the particles increase. These small particles can adversely affect other systems on the human body, especially cardiac functions.

In this study, one of the most patient-facing hospitals in Istanbul; Every day from Bahcesehir Research Hospital's Chest Policlinics, asthma, cough, allergy and so on. The average number of patients who applied with complaints was obtained. The mean number of patients who applied to this large hospital was taken and dusty days were detected and associated with modis satiation and hysplit programs.

As a result, an increase in the number of patients was detected in the spring and autumn seasons, especially the transition period in which dust comes. The large amount of dust that has been coming in these months, respectively; Syria, the Sahara and the Arabian Peninsula. Especially on the day when the dust came, the number of patients increased and the number of patients decreased on the day when the dust was less. However, a cloud of dust covering the city reveals an environmental pollution.

Keywords: Desert Dust, Chest Disease, Modis, HYSPLIT, Istanbul.

INTERNATIONAL CONGRESS OF HEALTH AND ENVIRONMENT

October 23-25, 2017

Adana-TURKEY

OP-133 INVESTIGATION OF INITIAL FINDINGS OF INDOOR AIR QUALITY IN TERMS OF PM 10 and PM 2.5 IN A HOSPITAL: A CASE STUDY FROM SANLIURFA PROVINCE

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People spend most of their time in an indoor environment. Particulate matter (PM) in indoor environments, depending upon the size of the particles (PM₁₀, PM_{2.5}), is one of the air pollutants that have an impact on human health. Prolonged exposure to particulate matter may lead to various health problems such as eye, noise and throat irritations, allergies, cancer, respiratory disease, and heart conditions, etc.

This study was initiated in the patient waiting room of 20 different policlinics of Mehmet Akif İnan Training and Research Hospital, which has highest patient density in the center of Şanlıurfa, in the second half of 2017 by means of Termo Scientific pDR 1500 personal DataRAM device for the measurements of PM₁₀ and PM_{2.5}. Preliminary findings were evaluated. PM₁₀ value was found to be between 84.48 µg/m³ and 18.55 µg/m³, and PM_{2.5} value was in the range of 32.71 µg/m³ and 9.45 µg/m³. When these values were compared with those of WHO (World Health Organization) and Regulation on Air Quality Assessment and Management, it was determined that the measurement values were higher in all policlinics except radiology policlinic. The average temperature of the hospital environment was measured as 31.7 °C, which was considered to be high, and the average relative humidity was measured as 48%, which was well. High PM₁₀ and PM_{2.5} values were considered to be the result of inadequate ventilation, lack of proper cleaning, low ceiling height, and high number of waiting patients, which could create a risk of dust particles in the indoor environment for the health of the staff and waiting patients.

**OP-134 EFFECTS OF DIESEL EXHAUST PARTICLES ON CILIARY BEAT FREQUENCY,
RELEASE OF CAMP AND INFLAMMATORY CYTOKINES FROM BRONCHIAL EPITHELIAL
CELLS CULTURED IN PATIENTS WITH AND WITHOUT COPD**

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Background: Studies suggest that particulate air pollution play an important role in the pathogenesis of airway diseases such as chronic obstructive pulmonary diseases (COPD); however, the underlying mechanisms are not clear. The objectives of our study were to investigate effects of diesel exhaust particles (DEP) on ciliary beat frequency (CBF) of primary human bronchial epithelial cell (HBEC) cultures from patients with and without COPD. We also studied effects of DEP on release of cyclic adenosine monophosphate (cAMP), which is known to modify CBF, and inflammatory cytokines from HBEC.

Methods: HBEC were cultured from surgical explants of smokers with and without COPD, and incubated with 50µg/ml DEP for 24hrs. CBF was measured at T0, T2, T4, T6 and T24 hours, whereas cAMP and granulocyte macrophage colony stimulating factor (GM-CSF), interleukin (IL)-6 and IL-8 were measured at T24hrs.

Results: DEP significantly attenuated CBF of HBEC from COPD patients at T6 (median= 100.6% vs 85.1, p<0.05) and T24 (median= 84.1% vs 52.4 %, p<0.001) hours as compared to control cultures. Similarly, DEP significantly decreased release of cAMP (0.004 vs 0.0007ng/ml), GM-CSF (0.31 vs 0.22pg/ml), IL-8 (23.63 vs 7.21 pg/ml) and IL-6 (0.18 vs 0.14 pg/ml) (P<0.05).

Conclusion: These findings suggest that DEP impair ciliary activity of HBEC through modification of cAMP and inflammatory cytokine release.

Funding: This study was funded by TUBITAK (project no: 113S437).

**OP-135 POLYCHLORINATED BIPHENYLS (PCB)s LEVELS and SEASONAL VARIATION
in an URBAN AREA of BURSA**

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Polychlorinated biphenyls (PCBs) are of importance in terms of leading to adverse health effects such as dermal toxicity, fatty liver, genotoxicity, hepatomegaly, immunosuppressive effects and neurotoxicity even at low levels. They were initially manufactured because of their non-flammability, chemical stability, high boiling point and electrical insulating properties, but in 1970s, they were banned due to their adverse health effects. PCBs are common persistent pollutants which are widely researched on air, water, soil, and other environmental matrixes. This study was performed in an urban district, Setbaşı, of Bursa Metropolitan city. Air samples were collected using a passive air sampler including a polyurethane foam (PUF) matrix which is selective for semi-volatile organic compounds like PCBs. Samples were collected with 1 month sampling periods from 05.02.2014 to 19.01.2015 at the balcony of four-story building. The sampling point was behind a main street with a moderate traffic load. PUF samples were extracted with ACE/HEX and analyzed with Gas Chromatography-Mass Spectrophotometer (GC-MS) after clean-up procedure. PCBs were analyzed for 84 congeners and the average concentration was determined as 80 ± 44 pg/m³. The PCB concentrations showed an increase with rising of ambient temperature. However, PCBs can also re-evaporate from the deposited or absorbed matrixes with heating as a result of Spring Pulse. PCBs have 9 homolog groups according to chlorine number content. The homolog group distribution was also determined and 2-, 3- and 4- chlorinated homologs were dominant. The ambient PCB concentrations were lower than the ones in the literature reported for urban areas. This was attributed to the sampling method, sampling area and sampling periods.

Keywords: Persistent organic pollutants, POPs, Air Quality, PCB Concentrations.

OP-136 DETECTION OF THE *bla*_{TEM} AND *tetA* GENES IN *SALMONELLA* SPP. FROM MEAT SAMPLES

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Salmonella spp. is recognized as one of the most common foodborne pathogens worldwide. This pathogen can be found primarily in the intestinal tracts of animals, foods and environmental sources. *Salmonella* causes typhoid fever, gastroenteritis, and bacteremia in humans. This pathogen infects humans, mainly via the contaminated water or food products. The overuse or misuse of antimicrobial agents in medical therapy, animal husbandry and agriculture have led to the emergence of resistant bacteria or multidrug-resistant bacteria. Multidrug resistant *Salmonella* strains have been considered as major concern for public health. In poultry and livestock, the common use of beta-lactams and tetracyclines for growth promotion and therapeutic purposes causes the development of antimicrobial resistance among bacterial pathogens such as *Salmonella*. Therefore, the aim of this study was to determine the presence of genes conferring resistance to beta-lactams (*bla*_{TEM}) and tetracycline (*tetA*) in the 46 *Salmonella* spp. including 40 chicken meat, 4 ground beef and 2 beef samples. Of the *Salmonella* isolates, 24 were found to be positive for the *bla*_{TEM} gene. All the *bla*_{TEM} positive isolates were originated from chicken meat. The *Salmonella* isolates (52.2%) carried the *tetA* gene. Among the *tetA* positive isolates, 22 were from chicken meat and 2 from ground beef. The result of this study indicates the presence of *bla*_{TEM} and *tetA* resistance genes in the *Salmonella* isolates from meat samples. To monitor the development and spread of antimicrobial resistance among pathogens such as *Salmonella*, surveillance of antimicrobial resistance may be performed periodically.

Keywords: *Salmonella* spp., *bla*_{TEM}, *tetA*, meat samples.

OP-137 DETERMINATION OF FIPRONIL RESIDUE IN CHICKEN EGG SAMPLES USING GC/MS

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Insecticides used in the fight against harmful insect populations those cause versatile environmental and health problems, deterioration of biological equilibrium as well as teratogenic, mutagenic and carcinogenic effects in humans and animals. Fipronil is a new generation modern organic chlorinated insecticide. It belongs to the phenyl pyrazoles group and its use is increasing all over the world [1]. The acute, chronic and subchronic toxicity, carcinogenic and genotoxic effects of fipronil on mammals and their effects on breeding and growing have been studied by number of researcher [2].

Fipronil has been found to be used against lice, fleas and acarids in the poultry farms of the Netherlands and Belgium in July 2017. This situation has led to the destruction of thousands of animals and millions of eggs, and all attention has turned again to this insecticide.

In this study, residual levels of fipronil in chicken eggs were determined by GC/MS using with modified QuEChERS method. For this purpose, 15 g of the homogenized sample was transferred to a 50 mL teflon tube and 15 mL of 1% acetic acid in acetonitrile, 1.5 g of anhydrous sodium acetate, 6 g of anhydrous magnesium sulfate and 150 µL of internal standard (ISTD) solution were added respectively. After 1.5 minutes of shaking, it was centrifuged at 4000 rpm for 5 minutes. After being held at -18 °C for 6 hours, the clean-up step was applied and analyzed by GC/MS after filtration through PTFE filter.

As a result of the study, it was found that the developed method gives high accuracy in detecting fipronil residue in chicken egg sample. The limit of detection (LOD) and quantification (LOQ) were established for fipronil as 1.5 ppb and 2.5 ppb, respectively. Fipronil displayed high recoveries at 10 ppb and 50 ppb levels as 93.1% and 90.1%, respectively.

Keywords: Pesticide, Insecticide, Fipronil, Chicken egg, GC/MS

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**OP-138 DETERMINATION OF THE CHEMICAL CONTENT OF MOUNT ARARAT (AĞRI DAĞI)
FLOWER HONEY USING UPLC-ESI-MS/MS**

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Honey is one of the most precious foods that have a very important place in the history of mankind with its rich nutrition and nutritive contents such as vitamins, enzymes, minerals and amino acids. Honey, which carries thousands of herbs and nourishing herbs, has been a natural source of healing for centuries as a valuable food because of its intact nature [1].

In this study, analysis of phenolic compounds and free amino acids of flower honey from Mount Ararat is carried out. For the analysis of phenolic compounds, 10 g of honey sample was dissolved in water (50 mL) and mixed 5 min by vortex. Then ethyl acetate (50 mL) was added and the flask was placed on shaker for 30 min. The flask settled for the phase separation for 180 min. The water phase was extracted two times more with ethyl acetate, and the combined ethyl acetate extracts were evaporated at 36°C. The residue was redissolved in methanol (1 mL) and filtered using PTFE 0.20 µm filter for injection to UPLC-ESI-MS/MS. [2].

In the determination of free amino acids, 10% (m/v) water honey solution was prepared using addition of 20% methanol solution (v/v) (20 ml), acidified with 0.1% formic acid (v/v), to 2.0 g of sample. The mixture was placed in ultrasonic bath at 36°C for 10 min to completely mix the extract and subsequently centrifuged at 4000 rpm and 4°C, then the supernatant was filtered through 0.20 µm PTFE membrane to remove any solid particles, and added to vials for injection [3].

According to the results, 3,4-dihydroxybenzoic acid (138.42 mg/kg) was detected as the major compound among 32 phenolic compounds were screened on flower honey. Additionally, free amino acid analysis results showed that Mount Ararat flower honey is rich in free amino acids and presences essential amino acids.

Keywords: Flower honey, Phenolic compounds, Free amino acids, UPLC-ESI-MS/MS

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**OP-139 AFTER POPPY SEED PASTE CONSUMPTION TOXICOLOGICAL ANALYSIS IN URINE
FOR MORPHINE AND THEBAINE**

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Objective: Using of poppy seeds to make patty, bread, cakes is very common in our country. Paste is a specific food in Turkey. The consumption of food products containing poppy seeds can lead to positive opiate urine test results. In this study, we investigated the presence of morphine in human urine after three different poppy seed paste consumption.

Methods: White, yellow and blue-black poppy seed pastes were analyzed. Ten volunteers were consumed pastes on three different dates, 100 grams. The illegal substance analysis was made from urine samples collected from each volunteer before and after breakfast. Screening of urine samples was analyzed by enzymatic immunoassay and confirmation analysis was made by Gas Chromatography-Mass Spectrometry.

Results: Determined alkaloids in all type of poppy seed pastes were; codeine, thebaine, morphine and papaverine. Immunoassay results for morphine and derivatives were found above the cut off value 300 and 2000 ng/ml. The presence of morphine was found until 48 hour in 9 cases. Results were compatible by validated GC-MS and immunoassay. Thebaine which was natural component of poppy seeds was chosen and analyzed by GC-MS. Thebaine was positive in all urine samples after consumption of opium seed paste.

Conclusion And Discussion: Morphine was detected in urine samples were significantly above 2000 ng/ml, after consumption of poppy seed paste. It is reported that significant variations for opiate alkaloids in poppy seed products and morphine concentrations. The importance of analyzing an indicator for poppy seeds such as thebaine has been shown. Because of the common use of poppy seeds food, distinguishing morphine abuse from poppy seeds consumption is very important. In these circumstances, the morphine cut off levels for drug abuse screening and specific biomarkers for poppy seeds consumption should be identified in guidelines.

OP-140 TOXICOLOGICAL ANALYSIS OF COLD BEVERAGES WITH HEMP VISUAL: ICE TEA AND ENERGY DRINKS

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Objective: “Cannabis Ice Tea” has been sold in our country recent years. This product has an orange can, “Swiss” and “C” is written beside the “Hemp” image. “C” and “+” symbol from the Swiss flag give a positive impression of cannabis. There are also “Cannabis Energy Drink” and “Chillo Bio” which are sold in Europe and have hemp visuals on their surfaces. $\Delta 9$ -Tetrahydrocannabinol and its derivatives are prohibited substance to be provided, sold and consumed for many countries. In this study, these drinks which are presented as psychoactive substance cannabis positive wanted to evaluate for contents.

Methods: Selected three kind of cold beverages were analyzed by immunoassay and chromatographic methods whether they contain prohibited ingredients under the relevant legal regulations. In the immunoassay studies; $\Delta 9$ -THC, cocaine, amphetamines, synthetic cannabinoids, opiates and benzodiazepine groups were analyzed. Over 2000 parameters including $\Delta 9$ -THC, cannabidiol, cannabinol, amphetamine and derivatives, opioids and other pharmaceutical drugs and caffeine were analyzed by Gas Chromatography-Mass Spectrometry.

Results: “Cannabis Ice Tea”, “Cannabis Energy Drink” and “Chillo Bio” were analyzed by immunoassay and parameter results were determined to be negative. The analysis results by chromatographic method; $\Delta 9$ -THC, cannabidiol, cannabinol, amphetamine and derivatives, opioids and other pharmaceutical drugs were also negative, while caffeine was positive for “Cannabis Ice Tea” is 62 μ g/mL, “Cannabis Energy Drink” is 228 μ g/mL and “Chillo Bio” is 342 μ g/mL.

Conclusion And Discussion: The sales policies for these drinks are followed by exaggerated taste and sense descriptions. Caffeine-containing beverages were not containing any cannabis or another prohibited psychoactive substance, can create an incentive effect that suggests the use of cannabis in the subconscious mind with a hemp logo. In general hemp plant is required to increased awareness of the use of visuals in sales and necessary legal arrangements, studies and inspections.

Keywords: Ice Tea, Cannabis, THC, Caffeine

OP-141 IS THERE A NEED FOR HEALTH AND NUTRITION PRESENTATIONS FOR ADULTS?

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Introduction: There is a close relationship between health and nutrition. In recent years, many metabolic diseases such as high blood pressure, cholesterol, etc., which are associated with the nutritional regime, are being emphasized. Nowadays, programs related to health and nutrition issues have also increased in social media. However, it should be remembered that adults may be exposed to information pollution in this way. For a country, community health and healthy workforce are important issues. For this reason, it is very important for the future of the country that adults, who have completed formal training, continue to be correctly informed about this essential issue. In this study, it was aimed to understand the attitudes of Iskenderun people in informing about health and nutrition.

Material and Methods: Within the scope of the research, following a presentation on "Health and Nutrition", a questionnaire was conducted to trainees attending various courses at the Public Training Centre in Iskenderun/Hatay, and it is aimed to learn the satisfaction and ideas of the trainees about informing. 750 valid questionnaire forms were obtained and descriptive statistical evaluation was performed for demographic variables.

Results and Discussion: Countries can only hope for the future with healthy communities and healthy generations. For this reason, proper nutrition and food safety are always important. The changing environment and living conditions directly affected our nutrition and diet, and in relation to this, some metabolic diseases increased in society. This phenomenon has led to new trends in society and the emergence of awareness in this regard has become a social need.

According to the results of these survey, the majority of respondents (85%) expressed their desire to receive similar presentations and to be informed for conscious awareness. With these and similar studies, people need to be informed about health and nutrition issues through government agencies and universities.

Keywords: Public Health, Health and Nutrition, Information Needs, Conscious Awareness

OP-142 FOOD ADDITIVES AND PACKAGING MATERIALS USED IN SOME PREPERAD FOODS

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Introduction: Ready to eat packed foods are presented to the market by packaging and adding various food additives to protecting food, give additional properties to them and extension of their shelf life. But some food additives and packaging materials may contain negative properties and their use in foods may not be appropriate for health. In this study some food additives and packaging materials, used in some snacks and beverages were investigated.

Material and Method: Snack (chocolate, biscuit, candy, chips) and beverage (juice, energy drink) samples collected from the local markets in Kırıkkale, Kocaeli and Hatay. A total of 100 samples, 15 samples from each group were examined regarding their food additive contents.

Discussion and Conclusion: It is generally known that some industrial packed food which have food additives have some harmful chemicals for human health. Nowadays, snacks and beverages are increasingly consumed especially by children. There are some scientific studies show that some food additives and food packaging materials may cause some negative health effects such as hyperactivity, obesity, cytotoxicity and carcinogenicity. In this study, it was determined that natural food additives are substantially used in samples belonging to known brands whereas synthetic food additives are used in lesser known brands. Because many people around in our community for the next generation can not see the real danger, children are unfortunately still exposed to this type of food intensely

Keywords: ready to eat food, packed food, food additives, cytotoxicity

OP-143 SIZE FREQUENCY AND LENGTH-WEIGHT RELATIONSHIPS OF THREE CEPHALOPODS, COMMON EUROPEAN SQUID, *LOLIGO VULGARIS*, COMMON CUTTLEFISH, *SEPIA OFFICINALIS*, AND COMMON OCTOPUS, *OCTOPUS VULGARIS* FROM THE YUMURTALIK COVE (ISKENDERUN BAY, NORTH-EASTERN MEDITERRANEAN, TURKEY)

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Cephalopoda is economically important species and consumed as food in Turkey. At this study, relative growth of Cephalopoda species; Common Cuttlefish, *Sepia officinalis*, Common European Squid, *Loligo vulgaris*, and Common Octopus, *Octopus vulgaris* were investigated in Yumurtalik Cove, Turkey. Samples were collected monthly from July 2014 to June 2015 (except February), with a bottom trawl net at 0-50m depths. Throughout the research 140 *S. officinalis*, 623 *L. vulgaris*, and 6 *O. vulgaris*, totally 769 specimens were sampled and analyzed. Morphometric equations for the conversions of total length, mantle length and weight were constructed for combined sexes for these species. The maximum dorsal mantle lengths of the Common European Squid, Common Cuttlefish, and Common Octopus were recorded as 260.4, 180.1, and 52 mm, respectively. The estimated growth coefficient *b*-values for mantle length (ML)-weight (W) for *S. officinalis*, *L. vulgaris* were 2.513 ($R^2=0.87$) and 1.976 ($R^2=0.86$) respectively. The *b*-values (total length-weight) were determined for *Octopus vulgaris* as: 4.798. In both species (*S. officinalis*, *L. vulgaris*) the relative growth of weight and mantle length was found positively hypo allometric. However, total length-weight showed positively hyper allometry of *O. vulgaris* from this region. Little information has been published regarding size frequency and LWRs for these three cephalopods from the Mediterranean coastal waters of Turkey. At least, data from this study will be useful for information management and conservation of squid fisheries on the Mediterranean coast of Turkey.

Keywords: *Sepia officinalis*, *Loligo vulgaris*, *Octopus vulgaris*, Length-weight Relationships, Yumurtalik Cove, North-eastern Mediterranean, Turkey

OP-144 IS IT PROPER TO START FOLIC ACID ON ALL PREGNANT WOMEN?

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Introduction-Objective: Neural tube should be closed end of the fourth week of intrauterine. If this closure does not take place, serious congenital anomalies called Neural Tube Defect (NTD) occur. Sufficient amounts of folic acid taken in preconceptional period prevent NTD development. The fact that the treatment and care of neural tube defects is difficult has created a serious awareness about folic acid use. This awareness increases in parallel with the increase in urbanization and socio-economic levels. Currently, women start to use folic acid as soon as they plan on pregnancy without consulting their doctors and doctors start folic acid on pregnant women routinely without checking the patient's folic acid levels. The objective of our study is to seek answers to the question whether folic acid is a deficiency that requires to be started on each pregnant woman.

Method: Study was conducted with the records of 852 non-pregnant women at the age of fertility (18-45) who referred to İnönü University TÖTM Neurology and Malatya Training and Research Hospital Internal Medicine Polyclinic, who had no medical condition that could influence folic acid levels, who were checked for folic acid by the related physician.

Results: For a healthy transplacental folate transition, the mother's plasma folate level should be greater than 3.08 ng/ml. The folic acid levels of 24 women (2,81%) were less than 3,08 ng/ml, while 594 (69,21%) women had folic acid levels greater than 6 ng/ml and 147 (17,25%) women had folic acid levels greater than 10 ng/ml.

Discussion: If these 594 women (folic acid >6 ng/ml) had been pregnant, folic acid would be started on them routinely. We are of the opinion that folic acid, which is associated with a serious illness as autism, should be used in case of need as a result of the examinations conducted.

OP-145 VISUAL COMMUNICATION IN URBANIZATION: EXTERNAL WALL ISSUE

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A big urban renewal progress happens in especially metropolitan cities of Turkey. This progress has certain positive and negative effects on physical and social textures of existing neighborhoods. New buildings via urban renewal projects are being attached to existing urban textures with different architectural characteristics. This togetherness was expected and hoped to be in a beautiful harmony; however, the results presents that it is a mandatory co-existence with certain visual communication problems: disproportion, incompatibility, communication, alienation, and individuation. One of the reasons of these problem is the facade design because facade is the main instrument for visual communication between the building and its neighborhood.

This study focuses on exterior wall design problems of the facades of new urban renewal buildings in Suadiye neighborhood, Kadikoy, Istanbul. Certain street facing facades of new buildings designed as an exterior wall without window openings while some of them has small staircase windows. The purpose of this study is to understand and evaluate the visual communication quality of these buildings with the street and with their close neighborhood. In this purpose, 10 different new building facades were studied. It is found that those building responded around 90% negative to Gehl's living city index. The result of the study supports the literature that exterior street wall without (or with little) window openings affects poorly visual communication with interior/exterior, it diminishes neighborhood relations, and changes visual communication culture in a negative way. As a result, it poorly affects public health. This study highlights the emergence and existence of a new problem in Turkish cities that presented itself recently. Therefore, local planning policy makers can prepare or modify facade design guidance with strict rules in order to prevent it becoming a chronicle problem.

Keywords: Urban Renewal, Visual Communication, Exterior Wall, Neighborhood, Health

**OP-146 DETERMINING THE KNOWLEDGE LEVELS OF THE FIRST AID FOR THE PERSONNEL
WORKING IN THE FIRE FIGHTING; THE EXAMPLE OF KAHRAMANMARAS PROVINCE**

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Firefighting teams are involved in fast and basic teams that intervene in the events. The intervention of the firefighter personnel shall directly concern the human life. The aim of this cross-sectional study is to specify the level of first aid information of the intended firefighting personnel.

The universe of the work was the firefighting personnel working in Kahramanmaraş Metropolitan Municipality fire department. No sample was selected and the study was conducted with 66 firefighters who accepted to participate the survey. The questionnaire was formed by the researchers, consisting of a total of 40 questions including a personal information form of 15 questions and a first aid information level form of 25 questions.

Data were evaluated with SPSS package program and frequency analysis, Kruskal Wallis Variance analysis, Mann-Whitney U test, Independent samples t test were used in statistical analyzes.

25 first aid information questionnaire was given 4 points for each correct answer and participants' first aid information score (FAI) was calculated over a total of 100 points. Participants' first aid information scores average was found to be 69.58 ± 14.19 . No statistically significant relationship was found between FAI and age, study year, title and education in the analyzes made. It was determined that 92.4% of the participants had first aid training.

Participants' FAI was found to be high. The main factor in the high level of FAI is periodic first aid training within in-service training. First aid training should be extended to in-service trainings of firefighters as firefighters can save much more life with basic first aid capability with basic intervention.

OP-147 THE EFFECT OF OBESOGENIC ENVIRONMENT ON ENERGY EXPENDITURE

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Objective: Nowadays, physical activity is important in the prevention and treatment of obesity, which is increasingly prevalent worldwide. The world health organization (WHO) has reported that obesity will be number one cause of death until 2030. It is known that, increase of excessive energy intake, as well as maintaining a sedentary lifestyle is effective in increasing epidemic status of the obesity. The concept of obesogenic environment has been expressed in the 1990s as "the environment that contributes to weight gain in the home and workplace and is not suitable for weight loss". Environmental changes that have occurred in the physical environment for the last 30 years have reduced physical activity areas and daily energy expenditure. This study was planned to determine the physical activity status of obese women who applied to the diet polyclinic for the loss of body weight.

Methods: The study was conducted with 97 non-disabled obese women who applied to İstanbul TEV Sultanbeyli State Hospital Nutrition and Diet Polyclinic between december 2016 and january 2017. Body composition analysis of individuals admitted to the polyclinic have been made, their height and body weight was measured and physical activity status was questioned by a questionnaire. During the interview, an individual nutrition program was prepared for each woman and training was given to healthy nutrition and the importance of physical activity.

Findings: All women in the study are housewives. The mean age and bmi values of women were found to be 32.3 ± 11.41 years and 34.88 ± 4.21 kg /m², respectively. It was found that 78.3% of women knew that it was important and necessary doing regular physical activity but they not do, and the absence of any walking area in the environment was shown as the most important reason (60.5%) for this situation. Other reasons was stated as, do not allowing by husband or family members (13.2%), having baby/child at home (10.5%), not want to walking alone (9.2%) and negative reactions of people around environment (6.6%), respectively.

Conclusion: The physical environment should not be ignored in struggling with obesity. The lack of environmental regulations for healthy living and the low number of sports/hiking areas are among the most important reasons contributing to obesity. It is necessary to establish an accessible, economical, reliable and sustainable environment, to reach the target of 10.000 steps per day or to exercise for 200 minutes per week which recommended by WHO for healthy life.

INTERNATIONAL CONGRESS OF HEALTH AND ENVIRONMENT

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OP-148 HOUSING CHARACTERISTICS AND PERCEIVED HEALTH

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Objective: The purpose of the study is to evaluate the relationship between housing characteristics and perceived health in the context of social determinants of health in Nilüfer District, Bursa/Turkey.

Method: The study was carried out in Nilüfer District/Bursa in 2013, which is one of the most socioeconomically developed districts of the Turkey. Nilüfer Municipality sampling database is used in this study. The sampling households visited in this study were determined by Turkish Statistical Institute. Information was collected by face-to-face interview with family members fifteen or more years-old living in the household. Collected *data were* statistically *analysed* using SPSS package program.

Results: This cross-sectional survey covered 3105 people living in 1007 household. 62.1% of the participants have their own houses. 0.3% of the houses have no tap water and 3.5% have no toilets. The majority of the houses are heated by natural gas (90.5%). In the dwellings, the average total number of goods/services consisting of air conditioner, tumble dryer, dishwasher, cable broadcasting and internet access is $2,1 \pm 1,2$ (minimum 0, maximum 5). In 10.4% of the households none of these goods/services are found. As the number of goods / services in dwellings increase, the perceived health also increase. The presence / absence of the washing machine in the home did not affect the health perception. About half of the households (41.0%) have no private car. The presence of private car in the residence raises the health perception.

Discussion: Nilüfer District is better than Turkey in terms of housing and its characteristics. There is a significant inequality on the basis of neighbourhoods in the district, which affects the perception of health. As the housing characteristics improve, the perceived health also increase.

Conclusion: Our study has shown a relationship between housing characteristics and health perception in one of the most socioeconomically developed district of the Turkey.

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OP-149 EVALUATION OF RELATIONS BETWEEN HOUSING CONDITIONS AND HEALTH: THE CASE OF MEZITLI DISTRICTS

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Housing as special to its residents is the basic unit of society and cities. Living in and access to safe and healthy housing is one of the basic human rights. In this study it is aimed to determine the relations between housing conditions and health of individuals living in that housing unit.

Data of the study is taken from the research conducted by incorporation by Mezitli Municipality and Mersin University for Mezitli Health City Project. For this project a questionnaire measuring WHOQOL-BREF quality of life assessments and socio-economic conditions was conducted in June 2017 and it was applied to 1083 person older than 18 in Mezitli districts. Methods of Chi-square, Student-T, One-Way ANOVA and Pearson Correlation are used in the evaluation of the data set.

It is observed that average score of WHOQOL-BREF quality of life assessment in physical section is 15,0±2,9, in psychological section is 14.8±2.6, in social section is 14.3±3.1 and environmental section is 13.8±2.4. Participants evaluate their current health condition as good 51.6%, as moderate 43.5% and as bad 4.9%. participants assessed their current health condition with respect to the year before as better 22.4% , as same 56.9% and as worse 20.7. 31.9% of the participants have chronic health problem. The relations between housing conditions and dependent variables are summarized in the table below.

Housing Conditions	quality of life assessment				Perceived health		chronic health problem
	Physical	<u>Psychological</u>	Social	Environmenta l	Current	With respect to the year before	
Type of housing	-	-	-	-	-	-	-
Type of ownership	-	-	-	++	-	-	-
Heating system	-	-	+	-	-	++	++
Number of rooms	++	+	+	+	-	++	++
Source of drinking water	+	+	+	+	-	+	-
Size of household	+	-	-	-	-	-	+
Number of rooms per each person	-	+	-	+	-	-	+
Number of floor	+	+	+	+	-	+	+
Time spent in that housing	+	-	-	-	+	+	+

(-) no relation (+) related (++) strongly related

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It is observed that some characteristics of housing have negative and positive effects on health. In consideration of these relations providing housing supply supporting and protecting health is important for improvement of public health.

Keywords: Housing, Health, Quality of Life

OP-150 RELATIONSHIP BETWEEN HEALING AND ENVIRONMENT: HEALING GARDENS

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Hospitals that provide the spatial requirements of an effective recovery process today, are not only composed of buildings equipped with the possibilities of modern medicine, they are designed based on integration with the environment. One of the most important of these is the healing gardens because they are closely related with the health of the community. Healing gardens which are designed in accordance with certain principles so as to prevent the progression of the disease and/or recovery are widely used in developed countries.

This understanding, which is changing abroad in scope of the importance of healing gardens, cannot yet be seen in the health institutions in our country. However, according to the results of research, healing gardens which contribute to enhancing life quality in addition to the contribution to the treatment and recovery process in health institutions are required by health institutions in our country. In this study, in line with the mentioned requirements, healing gardens were examined according to the garden types designed in compliance with the target audience and the obtained results about their effectiveness in healing process were given. In this context, both the design principles and the user-oriented needs of our country have been researched in Çukurova University Medical Faculty Balcalı Research Hospital example.

Healing gardens consists of four basic types: meditation gardens, rehabilitation gardens, social education programs, and patient-centered therapy gardens. Each type of garden is constructed according to different design criteria according to the treatment process requirements of the disease and contains different activities. These activities are called "Therapeutic Recreation". As a result of Therapeutic recreation activities it is possible to provide indirect contribution to determination of the ability of individuals by using natural methods, to establishment of the relationship between the special education and social life, to provision of rehabilitation through drama, games, sports and organizations and to the morale and motivation of family or companion.

Healing gardens within the framework of the thematic gardens, are among important gardens which provide physical and motivational contribution to the healing process of patients, a high quality recreation environment for hospital staff, an option for patient relatives to spend time and positive contribution to the overall landscape of the region and therefore they are utilized all over the world and they should be utilized in our country as well. The importance of this type of gardens is increasing due to today's conditions where stress is increasing. In our country, the healing gardens should be increased in suitable areas and measures should be taken to ensure their sustainability.

Keywords: Cukurova University Research Hospital, Environment, Healing gardens.

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Adana-TURKEY

OP-151 INVESTIGATION OF PLANT USE IN HOSPITAL GARDENS IN BURSA

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Plants has an important role during the treatments psychologically, phycially and socially besides providing aestehetic contribution to the place with the apprance of leaf shoots, shells, flowers and fruits, and aromatic smells and textures. The natural landscape, colors and s mells from plants in the hospital garden are stayed away people from stress, anxiety and sadness, and have a positive impact on human health. A most important connection point between nature and health is create regular and well-kept gardens in hospitals which have appropriate designs that ensure the patients feel soulful and good. The study material was the total of 26 state and private hospitals garden which located in Bursa (Osmangazi, Yıldırım and Nilüfer). Plants samples were collected with field studies at hospitals gardens, and diagnosed. It was classified and evaluated according to the design specifications of the plants. It was identified that plant use of State hospitals gardens is more successful than Private hopitals gardens, but it was determined that design and maintenance of gardens were not adequate.

Keywords: Bursa / Turkey, Hospital Gardens, Plant Use

OP-152 AN INVESTIGATION ON TOP POLLENS & POLLINATION BIOMORPHOLOGY OF *B. terrestris* L. 1758 (INSECTA:HYMENOPTERA)

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Introduction: *Bombus terrestris* (Linnaeus, 1758), which plays a role in the pollination of many plants in the natural flora after honey, is also used as a cultural pollutant. *B. terrestris* is the most common bumblebee species in Turkey's natural fauna. These species are found in major vegetation types in a wide range of habitats up to 1500 m above sea level. The taxon is mainly used for pollinating tomatoes, peppers and melons in open areas and almonds, plums and cherries in open areas

Material and Methods: This study is based on the field studies carried out between April 2016 and October 2017, in and around Nevşehir Province. The research is based on plant samples with *B. terrestris* specimens collected in ecological observations in their natural environment and mostly collected with traps or with various traps, and plants with pollen relation of *B. terrestris* species in the study area. In study, pollen samples obtained from *B. terrestris* specimens over body cover and plants are examined by light-scanning / electron microscope and preparations are prepared by Wodehouse (1935) method.

Results and Discussions: The majority of the plants that make up the vegetation of the overall survey area are Iran-Turanian and the locality does not differ much. Within the scope of the study, according to findings obtained as biomorphologic pollen analyzes; The first five flora members of *B. terrestris* strain pollinosis consist of Asteraceae, Fabaceae, Lamiaceae, Brassicaceae and Boraginaceae family.

Keywords: *B. Terrestris*, Pollination, Biomorphology, Ecology, Flora

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**OP-153 FISH FAUNA DISTRIBUTION OF LOTIC AND LENTIC ECOSYSTEMS IN BİLECİK
PROVINCE**

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Goal: In this study was investigated fish fauna of lotic and lentic ecosystem in Bilecik province.

Method: Sampling activities were carried out 3 dams, 14 ponds and 18 stream stations between 2010 – 2011 years. Gill net, trammel net, seine net and electroshocker was used in sampling activities. Species were identified according to metric and meristic characters.

Results: As a result of species identification 19 taxa were identified belonging to 8 families. There are determined 13 species in Lentic ecosystem, 10 species in Lotic ecosystem.

Discussion: Fish fauna of province consist of 12 native, 7 non-native fish species. Six of the alien species were found in the ponds and one was found in the river. While 4 of the native species were found in both ecosystems, it was determined that river ecosystems are richer in terms of natural species diversity. We thinking that mistake introductions to dams and ponds are main resource of invasive fish species in province.

OP-154 EFFECTS OF SMOKING ON DISORDER FEATURES AT MAJOR DEPRESSIVE PATIENTS

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Aim: The aim of this study was to determine the relationship between smoking and depressive disorder features at the patients who had been applied to Cukurova University Balcalı Hospital Department of Psychiatry Outpatient Clinic for treatment

Method: One hundred six depressive patients and 94 healthy controls were included to our study. All applicants were examined by the same clinician for 30-45 minutes. Major depressive disorder was diagnosed due to DSM-IV-TR criterias. All applicants filled out Beck Depression Inventory (BDI), Beck Hopelessness Inventory (BHI), Beck Suicide Ideation Scale (BSIS) and Visual Analog Scale (VAS). Depressive patients were divided into two different groups as smokers and non-smokers. Then depressive features were compared between smoker and non-smoker groups.

Results: Fifty of 106 depressive patients (47.2%) and 24 of 94 controls (25.5%) were smokers. The mean age was 37.04 ± 12.4 for depressive smoker group and 35.2 ± 10.4 for depressive non-smoker group. The suicide history was higher in smoker depressive patients than the non smoker depressive patients (44% vs 17.9%). Total score for Beck Hopelessness Scale of depressive smoker patients was higher than the non smoker group (12.00 ± 5.47 vs 11.21 ± 4.39). Alcohol misuse was also higher in depressive smoker group. The education level (years of education) was higher in non smoker depressive patients. All above findings were statistically significant.

Discussion: It is wellknown that depressive patients have risky behaviours about their health. In our study we observed that depressive patients have higher rates on smoking than healthy controls. Depressive smoker patients had a higher suicide rate, alcohol misuse than the nonsmoker depressive group. They have also high scores in hopelessness scale.

Conclusion: Smoking has been a worldwide personal and environmental health problem more than a century. It can cause and worsen several health problems including psychiatric disorders. The result of this study has shown that smoking has deleterious effects on depressive disorder by increasing suicide rate and hopelessness.

Keywords: Depression, smoking, mental health

OP-155 EFFECTS OF TREADMILL EXERCISE ON ELECTRODERMAL ACTIVITY IN SOCIAL ISOLATED RATS

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Aim: Socialto isolation is often seen a source of stress in modern humans. Stress is the response of the body is regulated by the autonomic nervous system. In this study, investigated the effect of exercise on electrodermal activity (EDA) in rats with social isolation.

Method: Male Wistar rats (n=32) were randomly divided into 4 groups, one control group, control + exercise group, social isolation stress group and social isolation stress + exercise group. Social isolation rats were exposed stress between 08: 00-14: 00 for 6 h in a separate room for 14 days. After 14 isolated days, treadmill exercise procedure was initiated. The running time in exercise groups were increased progressively through 4 weeks. EDA was measured by using a MP 30 system after the application social isolation and exercise. Followed by, was measured of blood corticosterone and hippocampal superoxide dismutase activity.

Results: Tonic and phasic skin conductance level value in control group was decreased compared to the other groups (p<0.05). Exercise and social isolation groups were no difference blood cortisol and superoxide dismutase activity.

Conclusion: It seems that maybe together treadmill exercise and social isolation caused to anxiety in rats. Besides this, exercise and social isolation can also cause activating these stress response systems and increasing phasic responses.

Keywords: Treadmill Exercise, Electrodermal Activity, Social Isolation

OP-156 THE FACTORS AFFECTING FOOT ANTHROPOMETRY

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Objective: In this paper, it was aimed to determine anthropometric measurements and index values of lower extremity skeletal system, and to investigate somatometric relationships between measurements in females wearing high heeled shoes (66) and non-wearing high heeled shoes (70) aged 18-45 years.

Method: The study was carried out with 136 females with similar demographic characteristic aged between 18-45 years. Our first group consisted of 66 females wearing 5 cm and more high heeled shoes, during at least 5 hours a day, three days a week and one year. The second group consisted of 70 females wearing shoe having heel height less than 5 cm at least one year. Demographic data (age, weight, height, body mass index-BMI) and anthropometric measurements of lower extremity (hallux valgus angle, circumference, length and index measurements) were assessed with objective methods.

Anthropometric measurements were performed with digital bascule, stadiometer, vernier caliper, antropometer, non-elastic tape measure, while hallux valgus angle were taken with Phalanx Goniometer. Statistical analysis was performed with SPSS 21.0. From these measurements, mean and standard deviation values were evaluated. Mann Whitney U test which was non-parametric test was applied, because variables have not normal distribution according to Kolmogorov Smimov test. Moreover, Pearson Correlation analysis were used. Significance was set at $p<0.05$.

Results: According to the result of measurements performed in females wearing and non-wearing high heeled shoes, the significant differences were found in measurements such as hallux valgus angle, crural index, the ratio of lower limb length to height, the ratio of thigh length to height, the ratio of dorsal foot height to lower extremity length, the ratio of lower limb circumference to thigh circumference, the ratio of navicula height to truncated foot ($p<0.05$).

Conclusions: These findings showed that these discrepancies in the lower extremity morphometry are caused by environmental factors such as unsuitable shoes, heel height, shoe type (shape) and shoe wearing habit.

Keywords: Lower extremity morphometry, high heeled shoes, environmental factors.

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Adana-TURKEY

OP-157 FACTORS AFFECTING THE USE OF ADDICTIVE SUBSTANCE IN VOCATIONAL SCHOOL STUDENTS HEALTH SERVICES

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Background: It was planned to learn the situation of high school students about the frequency of smoking, alcohol and substance use and to establish a program to combat smoking and other substances according to the results obtained.

Material and Methods:The study included 174 students who also read the Medical Documentation and Secretariat program and agree to participate in our survey. The questionnaire consisted of 28 questions.

Results: Of the 174 students who participated in the survey.149 were not working, 15 were working full time and 10 were working half a day. These students 92 were successful,55 were moderate 9 were good, while only 18 as very weak. 34 students were smoked 129 did not drink and 11 said they quit. 28 students using drugs at least once in their lives was while the number of students who did not use drugs was 146. Of the students, 152 were from Adana, 22 were from outside.

Conclusions: Smoking, alcohol and substance abuse is a problem in students who come to study outside of Adana. The reason why the literacy rate in the families migrating from East and Southeast Anatolia to Adana is extremely low; Because of terrorism is not considered to be sent to the school. Due to the legal regulations and sanctions related to smoking in Turkey, there has been a serious decrease in the rate of smoking especially in universities. These results also showed us that has reached the purpose of legal regulations in order to protect public health.

INTERNATIONAL CONGRESS OF HEALTH AND ENVIRONMENT

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Adana-TURKEY

OP-158 EVALUATION OF PERCEIVED EMOTIONAL ABUSE IN ELDERLY PEOPLE LIVING IN NURSING HOME

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Objectives: Comparing to the past, in this decade, elderly population is rapidly increasing. Possibility of emotional abuse is also inclining against elderly people who cannot use social, economic, political and cultural opportunities due to the lack of social security and support systems inadequacy. This study was conducted to evaluate the level of perceived emotional abuse of elderly people living in nursing homes.

Method: The study was carried out between 15 June and 15 July 2017 at the Adana / Turkey Geriatric Care and Rehabilitation Center as a cross-sectional and descriptive study. Participants; the population was 200 elderly people and the study was conducted with 118 elderly people by using randomized sampling method. Measures; Data were collected by socio-demographic questionnaire and Perceived Emotional Abuse Scale with face-to-face interviews. Analysis was made by using Mann-Whitney U Test and Kruskal-Wallis Test.

Results: Mean age of the participants was 74.63±6.76, 50.2% was male, 70.3% was married. The mean score of Perceived Emotional Abuse Scale was 133.86±35.23.

Conclusion: According to the results obtained in the study; it can be said that the elderly living in nursing homes are above the average of the Perceived Emotional Abuse Scale points average and the elderly individuals are exposed to mild levels of emotional abuse.

INTERNATIONAL CONGRESS OF HEALTH AND ENVIRONMENT

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Adana-TURKEY

**OP-159 DETERMINATION OF THE COGNITIVE STRUCTURES OF SCIENCE TEACHER
CANDIDATES IN RELATION TO ENVIRONMENTAL PROBLEMS THROUGH WORD
ASSOCIATION TEST TECHNIQUES**

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The purpose of this study is to determine science teacher candidates' conceptual association level on environmental problems. This research using the survey model is descriptive. The sample of the research consists of 1st 2nd 3rd and 4th grade students – 150 science teacher candidates in total at Cukurova University Faculty of Education, Department of Science Education in the spring term of the educational year 2016-2017. As the data collection tool Word Association Test developed by researchers has been used in this study. The researchers were asked to complete a word association test from the science teacher candidates. In this way, the words written by science teacher candidates are categorized as concepts related to environmental problems, and the frequency and semantic relations of concepts in each category are calculated as a determinant. Descriptive analysis was used to analyze data and Break Point technique was used to analysis of which developed by Bahar (1999). The datum were collected and the their analysis phase is continuing.

OP-160 DEPRESSION OF TAKING RADIOTHERAPY BONE METASTASIS PATIENTS

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Introduction: The environmental effects can be shown the biggest reason of the increasing all kinds of cancer. We can classify them, air pollution, unhealthy diet condition, consume of salty and food with nitrat. Today environmental effects shown that they are more effective than genetic or taking cancerogenic substance. Bone is the third most frequent site of metastasis, behind lung and liver. Prostate and breast cancer are responsible for the majority of the skeletal metastases. The relative incidence of bone metastasis by type of tumor, in patients with advanced metastatic disease. Depression is frequent in cancerology. The Beck Depression Inventory is world-wide among the most used self-rating scales for measuring depression.

Methods: According to the Primers, total a hundred patient, divided into four groups incorporate in the search. Before Radio threphy begins to the bones metastasis patents, first Beck 0 analyze was done and after radio threphy finished Beck 1 depression analyze was done.

Results: Bones metastasis patients according to the primers are divided into four groups ;, such as lung, breast, prostat and the other type of cancers. Changing of Beck 0 and Beck 1, statisticly, among themselves and among all the groups, meaningful result was reached up. $p < 0.001$. According to the number of metastasis of the patients have bones metastasis and taking radiotherapy, Beck 0 and Beck 1 scores changing, was found meanigful among themselves. $p < 0.001$. difference between Beck 0 and Beck1 on the patients, have bones metastasis from lung cancer < 5 and $6 +$, if the difference more than 5, risk ratio of the death can be increased.

Conclusions: Depression disorder, is a common disease among the oncology patients, can effect them, negatively. Take into account, according to the a hundred bones metastasis patients' Beck scale scores which are after radiothraphy is higher than the score of the before radiothraphy. According to the primers bones metastasis patients, when examined, the patients who are lung cancer group, when examined bones metastasis progress can seen that they can become earlier than the other groups.

Keywords: Bone metastasis, Palliative radiation, depression

INTERNATIONAL CONGRESS OF HEALTH AND ENVIRONMENT

October 23-25, 2017

Adana-TURKEY

POSTER PRESENTATIONS

INTERNATIONAL CONGRESS OF HEALTH AND ENVIRONMENT

October 23-25, 2017

Adana-TURKEY

PP-1 THE CONTAMINATION OF FIPRONIL IN CHICKEN EGGS

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Fipronil is a derivated from phenylpirazole which is developed to kill insects and mites. It is a substance which has licensed and legally sold in many countries to combat insects such as fleas, lice and ticks in pets such as dogs and cats. Nevertheless, it is strictly forbidden to use in animals producing food. WHO reports that fipronil is "avaragely danger" and will harm the kidneys, liver and thyroid gland if it is consumed too much.

The "poisonous egg crisis" that emerged in Europe in August 2017 is thought to have spread to about 20 countries, including some countries in Asia, due to exports, following the Netherlands, France, Germany and Belgium. According to recent EU sources, it is reported to have spread to 40 countries. It is believed that the current state of the existence of fipronil residues in eggs is due to their illegal use in farms in the Netherlands to combat parasites in food-producing chickens.

It is reported that the risk assessment is made for different populations and for the highest fipronil level found in obsolete eggs. According to this, the highest level of residual egg contains 1,2 mg / kg fipronil. According to EU rules, fipronil over 0.005 milligrams must be removed from the markets. Fiproniline over 0.72 milligrams is said to be "serious" harm to human health.

According to the statements made by the Food Safety authorities of the countries, it is noted that there is currently no risk for who consume fipronil in their diet, and that this level of fipronilin will not cause any health risks. The latest research done by the Ministry of Food Agriculture and Livestock has revealed that there is no problem in fipronil in eggs in our country. You can safely consume eggs.

PP-2 MARKER GENE EXCISION FROM TRANSGENIC PLANTS USING FLP/FRT SYSTEM

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Selection marker genes perform a critical function of identifying transformed cells or tissues in the plant transformation processes. The commonly used marker genes confer resistance to antibiotics or herbicides that suppress the growth of untransformed cells and allow the transformed cells to grow. Therefore, most transformation processes involve introduction of a marker gene along with the gene-of-interest. However, this marker gene serves no purpose once the transgenic clone has been isolated. As a result of escape of marker genes to the environment, generation of herbicide-resistant weeds and antibiotic-resistant bacteria are the main concerns related to use of marker genes. Many regulatory agencies worldwide recommend or enforce removal of the marker genes from commercially applicable transgenic plants.

Site-specific recombination systems, such as FLP–FRT and Cre–lox, carry out precise recombination reactions on their respective targets in plant cells. This has led to the development of two important applications in plant biotechnology: marker-gene deletion and site-specific gene integration. To draw benefits of both applications, it is necessary to implement them in a single transformation process. In order to develop this new process, the present study evaluated the efficiency of FLP–FRT system for excising marker gene from the transgene locus developed by Cre–lox mediated site-specific integration in rice. Two different FLP recombinases, the wild-type FLP (FLPwt) and its thermostable derivative, FLPe, were used for the excision of marker gene flanked by FLP recombination targets (FRT). While marker excision mediated by FLPwt was undetectable, use of FLPe resulted in efficient marker excision in a number of transgenic lines, with the relative efficiency reaching up to 100%. Thus, thermo-stability of FLP recombinase in rice cells is critical for efficient sitespecific recombination, and use of FLPe offers practical solutions to FLP–FRT-based biotechnology applications in plants.

PP -3 COPPER-INDUCED GENOTOXICITY IN *ALLIUM CEPA* L. (AMARYLLIDACEAE)

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Copper (CuSO₄) is considered to be an indispensable microelement for plants. Excessive copper (CuSO₄), however, is toxic and disturbs several processes in the plant. The aim of this study was to investigate the genotoxic effects of copper (CuSO₄) in rot tip cells of *Allium cepa* L.

Healthy and equal-sized onion bulbs were chosen for the experiments. We used the frequency of micronucleus (MN), chromosomal aberrations (CAs) and mitotic index (MI) as indicators of genotoxicity. Onions were exposed to increasing concentrations of the copper (CuSO₄) (2, 4 and 8 µM) for 72 h.

The results showed that copper (CuSO₄) treatment significantly increased the MN and CAs formation in all the treatment groups. Chromosomal aberrations for example, *fragment*, *C-mitosis*, *chromosome bridges*, and *chromosome stickiness* were observed. It was also found that copper (CuSO₄) has a mitodepressive action on mitosis, and the MI was decreased depending on the dose of applied-copper (CuSO₄).

As a result, copper (CuSO₄) increased DNA damage and caused genotoxicity.

Keywords: *Allium cepa*, chromosomal aberration, copper, micronucleus, mitotic index.

PP-4 MICROALGAL LIPID PRODUCTION AND EVALUATION FOR BIODIESEL PRODUCTION

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Biodiesel has attracted attention as an important fuel with the increase of petroleum-based environmental pollution. Microalgae provide several potential advantages for biodiesel production when compared to 'traditional' plants. In this study lipid production from *Nannochloropsis gaditana* which is a microalgae belonging to the class of Eustigmatophyceae was studied. Biodiesel production from these lipids was investigated and also biodiesel characterization was performed.

The effect of system parameters such as pH, carbon source type, nitrogen source type on lipid production was investigated. Microalgae powder is analyzed for lipid content using soxhlet methods to get the best oil content. Lipid extraction from algal biomass was achieved and the extracted lipids were used in biodiesel production. Transesterification method was used in biodiesel production and then biodiesel characterization was performed.

In the result of study, maximum lipid production were found as 24.96 g/L. After obtaining the extract in form of crude oil, the process of transesterification is carried out for biodiesel production. Characterization of produced biodiesel was performed with some parameters such as flash point, viscosity, etc. Biodiesel viscosity found as 5.3 mm²/sn and flash point was found as 135°C. Flash point, viscosity, sulfur content and carbon residue properties of the biodiesel produced in this study was found as in the range of standards.

Keywords: *Nannochloropsis gaditana*, biodiesel, transesterification

INTERNATIONAL CONGRESS OF HEALTH AND ENVIRONMENT

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PP-5 THE AFFECTS OF PESTICIDE USE ON HUMAN HEALTH

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The lands suitable for cultivation are getting less and less due to residential areas and industrial establishments. For this reason, we have to increase productivity in production and to obtain products with high quality. In our country which has different climatic conditions, many plants of different kinds are cultivating. This diversity creates a suitable environment for diseases, pests and weeds. If pesticides are not used in crop production, yield losses will be around 35% and in the event of an epidemic, up to 100%. Pesticides are the most preferred method for pests and disease control. Pesticides are particularly harmful to human health and the environment when used unconsciously and incorrectly. The reason for this is that pesticides are usually made up of poisonous substances. Pesticides affect people in a harmful way through air, water and soil as well as negatively affecting livestock, birds, fish and beneficial insects. Pesticide poisoning has often been the result of ignorance, carelessness and disregard. Poisoning can occur in three forms; mild, medium and severe. Equipment, such as gloves, masks, protective goggles, boots, hats, protective clothing, etc., must be used to prevent poisoning when preparing and using agricultural pesticides. In addition to these precautions, the following must be done; pesticides should not be stored in places where foodstuffs are stored, they should not be applied in strong winds, empty packages of pesticides should be destroyed.

**PP-6 MICROBIOLOGICAL PROPERTIES OF BOTH DRINKING AND USAGE WATERS IN
CORUM**

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Aim: In this study, it is aimed to investigate some microbiological characteristics of the source-well and center drinking water used in Çorum province. Furthermore, all the newly established Scada system for drinking water used for consumption in Çorum province was controlled and supervised.

Method: In Çorum province, 10 source-wells and tanks used for consumption, one tap per day, five days a week from the central tap water belonging to 40 locations; samples were taken in compliance with the hygiene rule for 250 ml special bacteriological sterile drinking water bottles. In winter, spring and summer seasons, total 1246 samples taken from source-well, warehouse and central provincial tap water between January and July were used. 100 samples were collected within the program jointly determined between the environmental health teams of Corum provincial Health Directorate between January-July. As microbiological parametric value; For *E. coli*, *Coliform*, *Enterococcus*; number / 100 ml and for *C. perfringens*; number / 50 ml in the "Regulation on Waters for Human Consumption" is evaluated. Counting of *E. coli*, *Coliform*, *Enterococcus* and *C. perfringens* bacteria was done by membrane filtration method. Based on for *E. coli* bacteria; Standard: TS EN ISO 9308-1, *Coliform*; Standard: TS EN ISO 9308-1, *Enterococcus*; Standard: TS EN ISO 7899-2 and *C. perfringens* bacteria; Standard: TS 8020 EN 26461-2. For *E. coli* bacteria; Chromocult medium, for *Coliform*; Chromocult medium for *Enterococcus*; Azide and for *C. perfringens* bacteria; TSC Agar medium was used. In Çorum, free chlorine control of all the drinking water used for consumption purposes was monitored both by the Scada system and manually. In addition, producing from drinking water and salt chlorine demo work has begun in the treatment plant.

Results: A total of 70 samples taken from sources and wells used for consumption in Çorum proved to have seasonal changes and some increases and decreases in bacteria rate are detected. According to the "Regulation on Waters for Human Consumption"; Chloride value: 0,2-0,5 ppm (mg / L) was determined in the value range, and as a result of daily control and inspection, 1346 samples were collected from the water samples between January and July in Çorum province. The results of the analysis of the tap water samples taken routinely within the program determined together with the environmental health teams of Çorum provincial Health Directorate are shared. No data contrary to the regulation has been determined as a result of the obtained data.

INTERNATIONAL CONGRESS OF HEALTH AND ENVIRONMENT

October 23-25, 2017

Adana-TURKEY

Discussion and Conclusion: It is known that source-well waters are microbiologically controlled in terms of public health. As a result of this study, it will be continued to investigate the water quality properties of the source-well and center drinking water used in Åorum by increasing the microbiological parameters. Besides, it is planned to control and supervise all newly established Scada system for drinking water used for consumption in Corum province. Increase of water quality is kept in the foreground by looking at the results obtained from demo operation of salt production in drinking water and treatment plant.

INTERNATIONAL CONGRESS OF HEALTH AND ENVIRONMENT

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Adana-TURKEY

PP-7 IDENTIFICATION OF CARBON FOOTPRINTS OF STUDENTS IN A FACULTY OF MEDICINE

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Introduction: While the amount of CO₂ produced per capita in the world is 4 tons; according to “Greenhouse Gas Emission Inventory” data by TSI in Turkey, it was calculated as 6.04 ton/person in 2013, 4.1 ton/person in 2010, and 3 ton/person in 2002.

Aim: The present study was conducted to identify carbon footprints of medical faculty students taking the course of environment in a public medical faculty and to determine action plans for reducing carbon footprints.

Method: The sample of the study consisted of thirty five students taking elective course. Carbon footprints of the students were calculated by using the calculation system on the website <http://www.karbonayakizi.com/#>.

Results: 94.3% of the students were male, 45.7% were the first-year students, 34.3% were the second-year students, and 20% were the third-year students. Average total carbon footprint of the students was 6.75 (min 3.05, max 23.08) ton/person. The mean tree needed to be planted considering the amounts of carbon produced by the students was determined as 9.8 (min 5, max 33 trees). As action plans for decreasing carbon footprints of the students were questioned, 45.7% (n=16) stated they would decrease the energy consumption and 34.3% (n=12) stated that they would consider options for transportation vehicles. It was found that while only 22.9% (n=8) were planning to plant tree, 8.6% were planning to work to improve awareness of their family members and friends about the environment.

Conclusion: The mean carbon amount produced by the students is greater than 2 ton/person targeted in the world. The fact that almost half of the students stated they were planning to decrease energy consumption makes us think that measurement of carbon footprint has improved awareness about the environment.

INTERNATIONAL CONGRESS OF HEALTH AND ENVIRONMENT

October 23-25, 2017

Adana-TURKEY

PP-8 ENVIRONMENT POLLUTION AND ETHICS

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Aim: The aim of the study is to examine the harm that human beings have to nature and the effort to correct and prevent this harm. Following the industrial revolution is to emphasize the environmental pollution caused by the human being, to protect the rights of the future generations, to provide the environment for leaving a livable world, how to implement it.

Material and Methods : Compilation method was used in the study. It is based on literature and studies related to public and private institutions related to environmental ethics in Turkey and in the world were examined and articles and internet sources published in domestic and abroad were utilized. The working method was carried out in two stages. In the first phase, studies related to the subject were screened. The studies studied in the second stage are synthesized and interpreted.

Results: Environment; Is defined as "all of the biotic and abiotic (non-living belonging), social, cultural, historical, climatic, physical factors that affect a living organism or community during its lifetime". Ethic; Meaning "related to morality". It is a Greek word. The moral difference is universal. With the industrial revolution, the production of goods and services has started to increase in the world, and the insatiable hunger of mankind has become the power that directs the world. Societies that make the goal of unconditional increase of production reveal unforeseen and unpredictable environmental problems of environment. It has been found that natural resources that are thought to be never consumed have begun to diminish, and ecological balance has deteriorated. A striking example of the seriousness of the loss of life in the air pollution of 4000 people in one week in the UK in 1952 These events have begun to reveal new perspectives that attach importance to all living and non-living elements existing in nature, Are grouped as "human centered ethics" (anthropocentric ethics), "biocentric", Environment-centered ethics "ecocentric" ethical approaches.

Discussion and Conclusion: Although the focal point of philosophy in the 19th and 20th centuries was nature, contemporary environmental ethics emerged as an academic discipline in the 1970's. Ethical solutions to environmental problems must be accountable, sustainable projects are just, human and nature friendly. Since it is not the only living person in the world, it is necessary to respect all living creatures and future generations.

Keywords: Environmental pollution, ethic, world

INTERNATIONAL CONGRESS OF HEALTH AND ENVIRONMENT

October 23-25, 2017

Adana-TURKEY

PP-9 ASSESSING MASS MEDIA COVERAGE OF GREEN ROAD PROJECT WITH REGARDS TO ENVIRONMENTAL ETHICS

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The Green Road Project aims to connect major highlands of 8 provinces in Eastern Black Sea. The project aims at a social and economic development in the region through tourism. With the project, it is planned to construct resorts in Samsun, Giresun, Gümüşhane, Bayburt, Ordu, Trabzon, Rize and Artvin provinces and 2600 kilometers of road in total. Sensitivity against the project shown through expressions and behaviours of locals in Çamlıhemşin, a district of Rize, has taken a remarkable dimension with mass media.

Mass media, which can transfer ideas, news and opinions to a large audience in a short time, has a great power with its potential to create public opinion, change and improve people and their relations. In this study, several news articles concerning Green Road Project, which appeared on national-local newspapers, news portals and television channels between July 2015 and November 2016 will be reviewed and discussed within the scope of environmental ethics. Document review, one of the data collection methods used in qualitative research, will be used in the study.

INTERNATIONAL CONGRESS OF HEALTH AND ENVIRONMENT

October 23-25, 2017

Adana-TURKEY

PP-10 EVALUATION OF SURFACE WATER QUALITY BY USING HEAVY METAL POLLUTION INDEX MODEL

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Water quality is considered as an important factor effecting public health and aquatic life. However, increase in population and technological development cause pollution of water resources and decrease in water quality. Thus, proper assessment of water quality becomes important for well-management of water resources and taking precautions against pollution. The using of water quality indices is an easy way to assess a large number of water quality parameters. It is a single number can be obtained by gathering all parameters and express the quality of water based on corresponding scale. In this study, the water quality of surface waters feeding Çamlidere Dam, one of the biggest drinking water source of Ankara, capital city of Turkey, was investigated with respect to heavy metal contamination. Water samples at three different branches of Çamlidere Dam were collected and 20 trace metals were analyzed. The concentrations of the elements in most of the samples were found within the limit values given in the standards. At some points, iron, aluminum, arsenic and barium exceed the limit values. The data obtained were used to calculate the heavy metal pollution index for three branches. It was found that the index values correspond to medium class for each branch and the branches are not fully polluted by trace metals. The heavy metal pollution index which includes many parameters was found useful to assess the overall pollution level with respect to heavy metals in Camlıdere area.

**PP-11 PHYSICOCHEMICAL PROPERTIES OF BOTH DRINKING AND USAGE WATERS IN
CORUM**

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Aim: In this study, it is aimed to investigate some quality of physical chemistry of the dam, spring-well, warehouse and drinking water used in the center of Corum. Furthermore, all the newly established Scada system for drinking water used for consumption in Corum province was controlled and supervised.

Method: In Corum province 3 dams, 10 sources-wells and reservoirs from the warehouse per month; tap water in the center of 80 locations five days a week used for consumption; samples were taken in compliance with the hygiene rules for 250 ml special bacteriological sterile drinking water bottles. In winter, spring and summer seasons, 2443 samples taken from dams, source-wells, warehouses, depots and tap water in the region were used as material. The parameters analyzed physicochemically; Turbidity, pH, Conductivity, Dissolved oxygen, Free Chlorine, Iron, Manganese, Ammonia, Nitrite, Sulfate, Total Hardness, Calcium, Magnesium, Organic Substance, Total Alkalinity, Bicarbonate, Carbonate, Hydroxide. The methods used are; for Turbidity: Nephelometry Method, for Dissolved Oxygen, pH and Conductivity: Electrometric Method, for Free Chlorine: A Photometric Method, for Sulphate, Iron, Manganese, Ammonia and Nitrite: Spectrophotometric Method, for Total Alkalinity, Total Hardness, Calcium, Magnesium, Organic Matter: TSE 266 Volumetric Tritium. In Corum, water used for consumption supervised which has height of all the storage of drinking water, fill rate, turbidity, pH, free chlorine control with Scada system; furthermore free chlorine is supervised both Scada system and manually. In addition the demo work was started producing the chlorine from salt in drinking water and treatment plants.

Results: In Corum used for consumption the total of 91 sample results taken from the dam, the source and wells with variability seasonal changes were identified dependent of increase of Turbidity, Conductivity, Dissolved Oxygen, Iron, Manganese, Ammonia, Nitrite, Sulfate, Calcium, Magnesium, Organic Matter, Total Alkalinity. According to the Regulation on Waters for Human Consumption; In the case of daily control and inspection, no negative data were found in the physicochemical parameters in the sample of 2352 water samples collected from the tank outlet and tap water in Corum province center.

Discussion and Conclusion: As a result of this study, water quality qualities will be researched as a result of more accurate analyzes of physicochemical parameters of reservoir and drinking water in dam, source-well and center used in Corum by using chromatographic methods. It is planned to control and supervise the newly

INTERNATIONAL CONGRESS OF HEALTH AND ENVIRONMENT

October 23-25, 2017

Adana-TURKEY

established Scada system for all the stored water for drinking water used for consumption in Corum. Increase of water quality is kept in the foreground by looking at the results obtained from demo studies of salt production in drinking water and treatment plant.

**PP-12 DETERMINATION OF WATER QUALITY LEVELS OF KARASU (ARABAN, GAZIANTEP)
AND MERZİMEN (YAVUZELI, GAZIANTEP) STREAMS**

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The present study was conducted to determine the water quality levels of Karasu (Araban) and Merzimen (Yavuzeli) streams flowing into the Fırat River and being under the effects of excess irrigation and agricultural activities. For this purpose, water sampling was performed from 5 different stations on Karasu and Merzimen streams in spring and summer 2017. The water temperature and pH were measured *in situ* and collected water samples were brought into laboratory under proper conditions for analysis of chemical oxygen demand (COD), biological oxygen demand (BOD), suspended solids (SS), total nitrogen (TN) and orthophosphate (o-PO₄). Obtained results were compared with Water Pollution Control Regulation (WPCR), Classification of Intra Continental Water Resources and Economic Commission for Europe (ECE). For Merzimen stream, obtained results are as follows: pH 7,70-8,10, temperature 16,6-27,4 °C, SS 7,70-91 mg/L, TN 2,75-4,76 mg/L, o-PO₄ 0,019-0,125 mg/L, COD 4,83-9,96 mg/L, BOD₅ 1,6-4,5 mg/L. In Karasu stream, levels of analysed parameters are as follows: pH 7,50-8,40, temperature 18,8-25,6 °C, SS 8,3-137 mg/L, TN 1,46-7,75 mg/L, o-PO₄ 0,010-0,177 mg/L, COD 4,41-10,93 mg/L, BOD₅ 1,83-2,8 mg/L. According to WPCR, Merzimen and Karasu streams were found to be first class water quality. However they were in the second and third classes water quality according to TN and o-PO₄ levels, respectively. Merzimen and Karasu streams were found to be first class water quality in terms of pH values however they were in the fifth class water quality when considering TN levels in regards to ECE. Besides when taking o-PO₄ levels into consideration, according to ECE Merzimen and Karasu streams were in the third and fourth classes water quality, respectively.

Keywords: Karasu Stream, Merzimen Stream, water quality

Acknowledgement: The authors would like to thank the Gaziantep University Research Fund for financial assistance (Project Number: AMYO.YLT.17.01).

**PP-13 HEALTH IMPACT ASSESSMENT (HIA): A NEW IMPACT ASSESSMENT SYSTEM IN
DECISION MAKING**

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The impact assessment systems that are the most important instrument to protect cultural and natural components of environment have been used in decision making processes for a long time. Environmental Impact Assessment (EIA) is commonly used instrument applying to individual projects. Beside that, there are several impact assessment technics such as Strategic Impact Assessment (SEA), Ecological Impact Assessment (EcIA), Social Impact Assessment (SIA), Environmental Risk Assessment (ERA) in recent years. Health Impact Assessment (HIA) provides investments with an application opportunity for researching specific and individual projects on social environment. When the studies that have been carried out until today are examined, it can be stated that HIA is applied as a stage of ERA or EIA studies. However, HIA need to take precedence to the infrastructure projects which are predicted to have an effect on community health according to chances in environmental factors.

When the impact assessment process within the framework of EIA Regulation in Turkey are examined, it can be stated that the stages in order of application are screening, scoping, assessing, reporting, decision making, monitoring are insufficient for taking care of community health for investments affecting the local resident directly such as hydroelectric power plant, energy transmission line, nuclear power plant or thermal power plant.

In this study, HIA is examined within the institutional framework, then it is discussed that the importance of its effectiveness to decision making process.

Keywords: Health Impact Assessment (HIA), Decision Making, Environmental Assessment (EA)

PP-14 BIOREMEDIATION OF NITROGENOUS COMPOUNDS FROM WASTEWATERS VIA BIOSORPTION: MICROALGAE *HAEMATOCOCCUS PLUVIALIS* MODEL

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Nitrogen-derived compounds such as NO_3^- and NO_2^- from agricultural, mining, construction and wood industries cause problems due to eutrophication in the nearby waters. Biosorption of NO_3^- and NO_2^- by biosorbents can be an effective method for the removal of nitrogen-derived compounds from wastewaters. In this study removal of NO_3^- and NO_2^- was investigated by using *Haematococcus pluvialis*. *Haematococcus pluvialis* is a microalgae and the richest natural source of astaxanthin, known as carotenoid.

Removal of NO_3^- and NO_2^- was investigated in batch system. Parameters such as pH, initial dye concentration, the biomass amount, the temperature effect on removal capacity were studied. The effect of solution pH was studied pH values ranging from 2.0 to 7.0. To determine the effect of initial dye concentration on removal capacity five different initial concentrations (25-200 mg/L) were used.

The maximum removal capacity was obtained at pH 6.5 and the maximum removal capacity of *Haematococcus pluvialis* was obtained as 79% and 81% for NO_3^- and NO_2^- , respectively. Removal percentage of *Haematococcus pluvialis* increased much quickly with increasing initial dye concentration from 25 to 100 mg/L.

As a result removal of nitrogenous compounds by *Haematococcus pluvialis* appears to be an efficient and low cost alternative to be considered in industrial wastewater treatment.

Keywords: Nitrogenous Compounds, NO_3^- , NO_2^- , *Haematococcus pluvialis*

PP-15 PYROLYSIS OF COMPOSITE PACKAGING WASTES WITH SOME ADDITIVE MATERIALS

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C/LDPE (composite / low density polyethylene) materials are composite packaging materials used for food packaging products such as coffee, tea, and nuts and their recycling is so difficult. They are made by different materials, not able to separate by hand, obtained by full consolidation at least two of the surfaces in order to increase the durability and combine the unique properties of materials. From this point, the aim of this paper is investigation of the recovery potential of C/LDPE wastes by pyrolysis. Firstly, physical and chemical properties of the composite C/LDPE wastes were determined. Secondly, the wastes were pyrolyzed with three different additive materials, namely boron production waste clay, ceramic production wastewater treatment sludge and zeolite at different ratios (5, 10, 15%). Pyrolysis experiments were carried out at 600°C and 30°C/min heating rate and solid, liquid and gas products were obtained. In the third stage, the aluminum content of the pyrolysis solid product were determined by gravimetrically. GC-MS (alkanes/alkenes and concentrations of PAHS) analysis of the liquid product were performed. Analyses of gas product was carried out by GC-TCD. It was seen that the gas product from waste C/LDPE with 5% ceramic production wastewater treatment sludge mainly contains ethane, ethylene, methane and hydrogen. The solid product was mainly comprised by aluminum material (approximately 90 %). Higher alkane/alkene compounds and lower aromatic compounds were determined in liquid product. This situation indicating that the liquid products have no toxic effects from this point of view. According to these findings, it is concluded that the solid product is an important aluminum source, the liquid product has contain higher alkane and alkene compounds and the gaseous product can be evaluated as hydrocarbon and hydrogen sources for commercial products such as carbon nanotube.

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PP-16 ELEMENTAL ANALYSIS METHODS FOR VEGETABLE SAMPLES WITH ICP-MS

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The aim of this study is to find the correct result of the analysis method applied in determination of heavy metal contents which are important for human health in frequently consumed vegetable products. 0.2 gram sample was transferred into a PTFE digestion vessel of a microwave digestion system (Berghof Speedwave Four Microwave Digestion System, Eningen, Germany). 6 milliliter of concentrated HNO₃, and 2 mL of ultrapure H₂O were added to the vessels, which were then tightly closed and placed in the microwave system. The microwave oven temperature program was carried out in three successive steps. In the first step, the temperature was raised linearly from room temperature to 150 °C in 10 min. In the second step, the temperature was linearly increased to 200 °C in 15 min and in the last step, the temperature was decreased to 50 °C in 21 min. After the cooling to room temperature, the digested samples were diluted to a final volume of 25 mL with ultrapure water. A PerkinElmer ELAN DRC-e model ICP-MS system equipped with a Scott Spray Chamber (Norwalk, CT, USA) was used for simultaneous multielement detection of As, Cd and Pb. First, the performance of the method was evaluated in terms of linearity (calibration curve), limit of detection (LOD), limit of quantification (LOQ), and recovery. The standard addition method was used to obtain the calibration curves. The linearity of the analyzed elements was tested by calculating the regression line using the least squares method, and this was expressed by the coefficient of regression (R²). The LOD was estimated as 3 times the standard deviation, while the LOQ was estimated as 10 times the standard deviation. The same procedures and ICP-MS conditions used for the sample analyses were used for the recovery studies. To verify the recovery and precision of the proposed method, standard reference materials from ERM-BC 084a Tomato Paste, NIST 1573 A Tomato Leaves were analyzed. As a result of linearity studies, sample work is reliably analyzed with the proven method. The results are given in Table 1 and Table 2.

Table 1. Some method validation data of analyzed elements

Parameters	Calibration Curve	R ²	LOD (µg L ⁻¹)	LOQ (µg L ⁻¹)
Pb	y=11293x+2738.9	0.9992	0.14	0.46
Cd	y=1440.7x-29.974	0.9999	0.18	0.60
As	y=1012.3x-737.02	0.9990	0.23	0.78

INTERNATIONAL CONGRESS OF HEALTH AND ENVIRONMENT

October 23-25, 2017

Adana-TURKEY

Table 2. % Recovery values of analyzed elements

Elements	Recovery NIST -1573a TOMATO LEAVES	Recovery ERM-BC 084 TOMATO PASTE	Recovery (5 µg L ⁻¹)	Recovery (25 µg L ⁻¹)	Recovery (50µgL ⁻¹)
Pb	-	99.44±1.39	101.63±0.9	101.46±0.20	101.01±0.43
Cd	-	101.87±2.48	98.88±1.22	102.39±1.25	97.09±0.55
As	98.8±1.7	-	98.85±1.58	99.6±0.7	97.83±0.56

95

INTERNATIONAL CONGRESS OF HEALTH AND ENVIRONMENT

October 23-25, 2017

Adana-TURKEY

PP-17 THE EFFECT OF AQUACULTURAL FEED ON THE ENVIRONMENT

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Aquacultural feeds generally involve 0.9-1.5% of phosphorus and 7-8% of nitrogen. The amount of nitrogen taken through feeds varies by fish species, yet it is around 20-30% and the the remaining 70-80% is either thrown back into the water or left in the water as feces. Feeds and wastes that are not consumed by fish accumulate in the sediment. These accumulated parts constitute or resolve the nutrient source of the living beings in the benthic. Inappropriate feeding methods lead to an increase in the amount of organic load in the sediment section, which ultimately causes pollution. Sustainable aquaculture can be provided without any harm to the environment by means of a proper feeding method. Feed-related pollution in fish production results from the physical characteristics, chemical characteristics of the feed and the applied feeding method. This study touches upon the physical and chemical structure of fish feeds, the effects on the environment and the precautions to be taken to eliminate these effects.

Keywords: fish feed, aquaculture, environment

INTERNATIONAL CONGRESS OF HEALTH AND ENVIRONMENT

October 23-25, 2017

Adana-TURKEY

PP-18 CLOSED IRRIGATION SYSTEM TO SAVE WATER AND PROTECT ENVIRONMENT

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Water is one of the most important natural resource not only in Turkey but also all over the world. Around 1.2 billion people today have no access to water and demand will increase by 30% by 2020. Today the main issue is water scarcity. Farming and irrigation are usually come out when we talk about water scarcity. Agriculture, which is the largest consumer, uses 70% of global water. Unfortunately, much of the water wasted by also agriculture through inefficient way of use. In Turkey, a large amount of agricultural land is held by small holders which has a negative impact on water use. Different kind of crops are planted and irrigated in different ways throughout the Turkey. Open channel irrigation is the most common system in Turkey. It is cheap and easy to use but it is not environmentally friendly system. Nearly 20-50% of the water supply is wasted as a result of leakage in transfer and network lines, evaporation and operation losses. With current irrigation systems, public health is also concern. General Directorate of State Hydraulic Works is in charge of the planning, management, development and operation of all of Turkey's water resources. It started some projects about closed irrigation system. With closed irrigation system, water will be used economically, had a high land use ratio, had a high efficiency, ensured less evaporation and ensured clean environment.

**PP-19 COLOR REMOVAL OF PROCION YELLOW H-EXL TEXTILE DYE BY
ELECTROCOAGULATION USING IRON ELECTRODES AND DETERMINATION OF ENERGY
CONSUMPTION**

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In this study, color removal of Procion Yellow H-EXL textile dye was investigated by electrocoagulation using iron electrodes in the presence of 25%NaCl+75% Na₂SO₄ (w/w) supporting electrolyte mixture in a batch electrochemical reactor. Batch electrochemical system was equipped with electrochemical reactor, Goodwill PST-3201 programmable DC power supply, Lauda RE 630S heating/cooling tank, Heidolph RZR 2021 mechanical mixer and Heidolph PD-5206 peristaltic pump. The reaction medium was stirred at 500 rpm. The effect of experimental parameters were operated in the range of 100-500 mg/L textile dye concentration, 2-10 g/L electrolyte concentration, 2-10 mA/cm² current density and 20-60°C reaction temperature in 10 min electrocoagulation time. The color of the textile dye was analyzed using UNICO 4802 UV/Vis double beam spectrophotometer at 420 nm wavelength.

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**PP-20 COMPARISON OF DIFFERENT RAINWATER HARVESTING SYSTEMS BY USING LIFE
CYCLE ASSESSMENT**

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Green buildings are the buildings designed to deliver water and energy conservation. Rainwater is treated as a resource rather than a waste product in these buildings. According to LEED V.4 green building certification system, Sustainable Sites credit addresses the management of both the quantity and quality of rainwater runoff. With this credit, rainwater-harvesting systems come to front. There are different rainwater harvesting systems based on different construction materials and components. These systems are favorable but on the other side they would have also environmental impacts at the construction, operation and demolition stages. These environmental impacts will be different depending on the differences on the structures. Since LEED V.4 depicts the use of low-impact development (LID) strategies for rainwater harvesting, the alternatives would be investigated and compared. At that stage, Life Cycle Assessment (LCA) is a powerful tool. With this motivation, in this study, different rainwater harvesting systems (concrete, polyethylene, polyester and stainless steel based) were compared by using LCA. The functional unit was 1 m³ rainwater harvesting. Ecoinvent database of the software (SimaPro 8.0.1) was used. CML-IA method was used to conduct LCA analysis in terms of global warming potential, ozone layer depletion potential, acidification potential, eutrophication potential, abiotic depletion elements, abiotic depletion fossil fuels, freshwater aquatic toxicity, human toxicity potential, photochemical ozone creation potential, terrestrial ecotoxicity potential.

This study was financially supported by the Anadolu University Scientific Research Project Commissions under the Grant no: 1705F301.

PP-21 BIOSORPTION OF A SYNTHETIC AZO DYE USING SAWDUST BIOMASS OF HORNBEAM TREE AS A SUSTAINABLE BIOSORBENT MATERIAL

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The biosorption of a model synthetic azo dye (Basic red 46, BR 46) onto the sawdust biomass of hornbeam tree (*Carpinus betulus*) as a sustainable biosorbent was studied as a function of pH, biosorbent amount, initial dye concentration and contact time in this research. The equilibrium behavior of BR 46 biosorption was examined by Freundlich, Langmuir and Dubinin-Radushkevich isotherm models. The equilibrium data fitted well with Freundlich model. This finding indicated a heterogeneous multilayer dye biosorption. The kinetic behavior of biosorption process was tested by the pseudo-first-order, pseudo-second-order and intra-particle diffusion models. The kinetic data were well described by both the pseudo-first-order and pseudo-second-order models. Thermodynamic studies showed that the biosorption process of BR 46 was feasible and spontaneous. The obtained results indicated that this sawdust biomass could be used as a promising biosorbent for the treatment of wastewater without high cost.

Keywords: Hornbeam; Sawdust; Wastewater; Biosorption

**PP-22 ADSORPTION POTENTIAL OF GYPSUM AS A LOW-COST ADSORBENT FOR
TREATMENT OF COLORED WASTEWATER**

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In this study, the removal of an azo dye (Basic red 46) by gypsum as an inexpensive adsorbent from aqueous solution was examined in a batch adsorption system. The effective environmental parameters on the adsorption process, such as initial dye concentration, pH value, contact time and amount of adsorbent were optimized using classical test design. The equilibrium, kinetic and thermodynamic studies for the adsorption of Basic red 46 onto the gypsum material were performed. The dye adsorption yield of adsorbent was significantly influenced from the change of operating variables. The experimental data were best described by Langmuir isotherm model and the pseudo-second-order kinetic model. Thermodynamic studies indicated that the adsorption of Basic red 46 by gypsum was feasible and spontaneous. Thus, this study revealed that gypsum could be used a cheap adsorbent material for the wastewater treatment.

Keywords: Gypsum; Azo dye; Adsorption; Wastewater treatment

**PP-23 A REVIEW ON ABILITY OF THE BIOREMEDIATION PROCESSES OF CRUDE
PETROLEUM-OIL IN CONTAMINATED WATER**

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The chemical treatment that includes direct injection of chemical oxidants into contaminated soil and groundwater thereby altering native aquatic chemistry and biology. the Biological treatment most regularly includes the breakdown of pollution into nontoxic structures utilizing microbiological forms. Thus, the Biological treatment most regularly includes the breakdown of pollution into nontoxic structures utilizing microbiological forms, the benefits of utilizing mixed cultures as opposed to pure cultures in bioremediation have been generally illustrated. It could be ascribed to the impacts of synergistic collaborations among individuals from the affiliation, the mechanisms in which petroleum degraders' benefit from synergistic interactions may be complex, it is conceivable that one species removes the harmful metabolites (that generally may disturb microbial exercises) of the species going before it. additionally, the possibility that the second species are able to degrade compounds that the first is able to only partially, also more researchers have ought to be coordinated towards understanding the parts of individual individuals in affecting the adequacy of a microbial consortium, these further support of the hypothesis that every part in a microbial group has a noteworthy part and may need to rely on upon the nearness of different species or strains to have the capacity to survive. They are delivered by numerous bacterial strains that can debase or change the segments of petroleum items. They are non-harmful, non-dangerous, biodegradable and naturally neighborly mixes.

PP-24 EFFECT OF DIFFERENT MYCORRHIZA SPECIES ON SATSUMA MANDARIN (CITRUS UNSHIU MARC.) TREES YIELD AND NUTRITION

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Cukurova region' soils are rich in CaCO₃ and have high pH. Consequently soil fertility is low and P, Zn and Fe availability is restricted. Nearly 75 % of citrus production is done in Cukurova region and Zn and Fe deficiency is very common. Since citrus are mycorrhizae dependent, mycorrhizal inoculation may solve nutrient deficiency problem of the regions. In order to develop healthy citrus plantation, mycorrhiza inoculated citrus seedlings transplanting to field conditions is a very important agricultural strategy. Under the field conditions effect of different mycorrhiza species application on fruit yield, plant nutrient contents and spore number were examined.

In 2005, a long-term citrus field experiment was carried out under the Ç.Ü. Research Area. *G. Mosseae*, *G. Etunicatimum*, *G. Clarium*, *G. Caledonium* and mix inoculum were used. The shoot plant nutrition content (P, K, Ca, Mg, Fe, Cu, Zn and Mn) was analyzed by dry ash method through ICP-OES (Wheal et al., 2011). Data showed that *G. etunicatimum* and *G. Clarium* have the most spore number. Mix inoculum and *G. caledonium* species inoculation increased yield more than other species. There were no significant differences between mycorrhizae species for plant nutrition content except for Copper. The highest value of Copper was found 12,43±1.6 ppm for *G. caledonium* inoculated plant and only 8,13±2,31 for mix of species.

**PP-25 INVESTIGATION OF IN-VITRO ANTIBACTERIAL ACTIVITY OF VARIOUS
DISINFECTANTS AND ANTISEPTICS**

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Since disinfectants and antiseptics are used to maintain standard hygiene conditions and to remove pathogenic microorganisms that may create a risk of infection, their activities against bacteria must be known before using these products.

The study researched antibacterial activities "experiment method and requirements" as specified in the standard so that "TS EN 13727 + A1 Chemical disinfectants and antiseptics-quantitative suspension test evaluate the efficacy of killing bacteria in the medical field using bacteria which active substance including, disinfectant and / or antiseptic 4% Chlorhexidine Gluconate, 0.25% Di-decyl di-methyl ammonium chloride and 10% povidine iyode, *Escherichia coli* K12 NCTC 8999, *Pseudomonas aeruginosa* ATCC 15442, *Staphylococcus aureus* ATCC 6538, *Enterococcus hirae* ATCC 10541. For each disinfectant/antiseptic, 1/30, 1/100, 1/1000 dilution was prepared. Each dilution was treated with the indicated bacteria for 1.5 and 30 minutes.

The difference between the number of colony breeding after contact with disinfectant was less than 5 log, indicating that disinfectant was not effective. 4% Chlorhexidine Gluconate was found to be effective on bacteria from 1 st minute except 1/30 dilution of *E. hirae* ATCC 10541. 10% povidine iyode was effective from 1st minute on *P. aeruginosa* ATCC 15442 and *E. coli* K12 NCTC 8999 at dilution of 1/30. However, *S. aureus* ATCC 6538 and *E. hirae* ATCC 10541 showed lethal effects from the 5th minute on bacteria. 1/30 dilution of surface-disinfectant containing 3.33% di-decyl di-methyl ammonium chloride on *P. aeruginosa* ATCC 15442 and *S. aureus* ATCC 6538 strains is effective on these bacteria by treatment for at least 5 minutes. In 1/100 and 1/1000 dilutions, this disinfectant is ineffective.

As a result, the most effective disinfectant tested was 4% Chlorhexidine Gluconate. A dilution of 1/30 showed efficacy when applied for 5 minutes per disinfectant. 1/1000 dilution showed no activity on any bacteria.

**PP-26 OPTIMIZATION OF MEDIUM COMPONENTS FOR PHYTASE PRODUCTION FROM
ENTEROBACTER SP.**

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Phytate, the salts of phytic acid, is the major form of phosphorus in plant seeds but phytate-bound phosphorus is not used by monogastric animals who are lacking in the intestinal digestive enzyme. Indigestibility phytate phosphorus in plant-derived feeding stuff passes through the gastrointestinal tract. Excess phosphorus excretion can lead to environmental pollution. Phytase hydrolyzes indigestible phytate to *myo*-inositol pentakisphosphate and orthophosphate so this enzymatic activity produces available phosphate. Phytate-degrading enzymes have recently supplemented in animal feed to increase the utilization of phosphorus and reduce pollution of animal excreta.

The objective of the present study was to optimize the culture conditions for maximum phytase production by *Enterobacter sp.* which isolated from wastewater treatment plant. For this Liquid medium containing 1% glucose, 1% yeast extract, 0.1% MgSO₄, 0.1% CaCl₂, 0.1% Na-phytate, (pH 7.0) was used as an initial enzyme production media. Bacterial culture was incubated at 300 rpm and 37°C for 48 h. Then the initial enzyme production medium was optimized. The best carbon and nitrogen sources for maximum phytase production were 1% lactose and 1% casein, respectively. The enzyme was stable between the pH 5.0 to 9.0 but the optimal pH was found to be 6.5. The enzyme was also stable between temperature ranges 25 °C to 55 °C but the best temperature for enzyme activity as found to be 37°C. In addition agitation rate of medium, the age and amount of the inoculum was investigated. As a result 150 rpm, 9 hrs and OD₆₀₀=0.06 were found respectively. Maximum phytase activity was 343.44 U/ml after 48 hrs of incubation under optimal conditions. Consequently it is seen that enzyme from *Enterobacter sp.* that can be predicted that result of feed addition at monogastrics becomes prevention of environmental pollution

INTERNATIONAL CONGRESS OF HEALTH AND ENVIRONMENT

October 23-25, 2017

Adana-TURKEY

PP-27 CURRENT APPROACH TO A ZOO NOTIC DISEASE IN TURKEY: “BRUCELLOSIS”

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The World Health Organization (WHO) considers that brucellosis is a zoonotic infection with a worldwide impact, contributing to significant health and economic problems. According to the WHO reports, annually more than 500,000 incident cases of brucellosis are notified worldwide especially from developing countries, and that for every case diagnosed with the disease, four cases go undetected. Although almost a century has gone by since its first description in the country, Turkey has not been able to eradicate brucellosis, which remains a major public health problem.

The geographic situation of Turkey is always a risk factor for the dissemination of contagious diseases, mainly from the eastern and southeastern neighbors. Brucellosis is endemic in all of the countries surrounding Turkey. The relative abundance of *Brucella* species vary among geographic regions. The first documented case of laboratory-confirmed brucellosis in Turkey was in 1915. The first cases of *Brucella abortus* infection were diagnosed in 1932. *B. melitensis* is the most common species isolated in the Middle East, whereas *B. abortus* and *B. suis* are more frequently isolated in regions of South America, the USA and many European countries. In Balkan countries, such as Greece, *B. melitensis* is a more common cause of infection in humans than is other *Brucella* species. Similarly, in Turkey, *B. melitensis* accounts for the majority of isolated species, while *B. abortus* is isolated less frequently. The first report to describe a patient with *Brucella* infection due to *B. suis* in Turkey was in 2016.

In this review, we give an overview of the epidemiological and epizootic status of brucellosis in Turkey.

Keywords: Brusellosis, *Brucella spp*, Turkey, zoonotic diseases

PP-28 CHELATING AGENT GRAFTED HYDROGEL FOR EFFECTIVE REMOVAL OF URANYL IONS

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Uranium is one of the most detected radionuclides and it has dangerous effects on human health and environment [1]. Moreover, it is also one of the main source for nuclear energy. Both toxic properties and use of uranium for energy production are need to follow this element. Removal and recovery of uranium are a popular research area for scientist. The most used method for uranium removal are chemical precipitation, membrane filtration, solvent extraction, ion exchange, and adsorption. Among these methods, adsorption is the most preferred methods due to feasibility and cost [2]. Choosing of suitable adsorbent is very important in the adsorption experiments. Most commonly used adsorbents are clays, zeolites, natural and synthetic polymers. Especially, polymers are preferred due to selective structural properties when they are prepared for a molecule or ion. Most chelating agent having high binding capacity with metal are not used as an adsorbent because they are dissolved in the water. If these molecules are immobilized on a solid surface, they can be used an effective adsorbent [3]. In this study, calcon carboxylic acid (CCA) was grafted into polyacryl amide (PAA) structure and a new composite material was synthesised including PAA-CCA. Then, the adsorption properties of new material was examined for uranyl ions. The obtained adsorption isotherms can be seen in Figure 1. The maximum adsorption capacity of adsorbent was calculated as $0.079 \text{ mol kg}^{-1}$ based on Langmuir model.

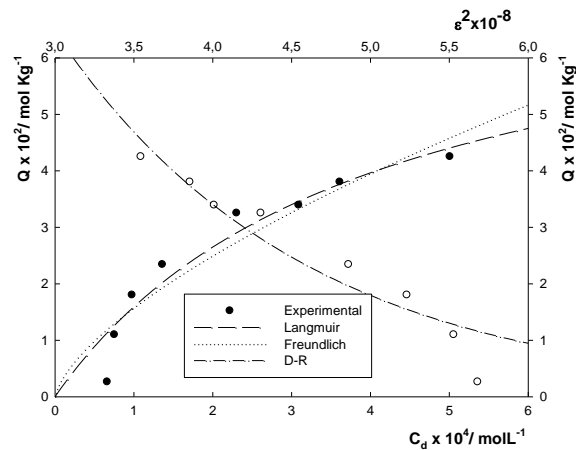


Figure 1. PAA-CCA'ya UO_2^{2+} adsorpsiyonunun Langmuir, Freundlich ve D-R modellerine uyumu

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October 23-25, 2017

Adana-TURKEY

Keywords: Uranyl, Adsorption, Polyacrylamide, Calcon carbocyclic acid

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**PP-29 THE EFFECT OF HIGH VOLTAGE LINES ON THE PHENOLOGICAL AND
POMOLOGICAL DEVELOPMENT OF THE FRUITS OF SWEET CHERRY, EARLY BURLAT**

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The aim of this study is to detect the adverse effects of power lines on phenological and pomological properties of Early Burlat variety of cherry.

This study was conducted in the department of Horticulture of KSU Faculty of Agriculture between the years of 2013-2016. It was focused on Early Burlat variety of the cherries grown in a previously established 9 year-old garden. In the study, Early burlat cherry trees placed in the parcels below the power lines were observed for three years and their bouquet formation abilities as well as some pomological properties (fruit weight, fruit height, fruit length, stalk lengths and seed weight) were measured on the 1st, 2nd, 3rd and the 4th year. In this study, 18 Early burlat cherry trees, which were divided into two groups as 9-irrigated under control and 9-normally irrigated each consisting 3 repetitions including 3 individuals, were selected. Additionally, the effect of power line on fruit formation was also investigated. Through the observations made for three years, we found that cherry yield and bouquet formation increased significantly when controlled irrigation was performed. In the group whose irrigation was not regulated, excessive and uncontrolled water use negatively influenced the yield and pomological properties. In both groups, when the trees were exposed to magnetic field produced by the power lines above them, not only the fruits produced were at undesirable weight and length but also the didymous fruit percentage was higher.

Therefore we conclude that preferring the controlled irrigation contributes to bouquet formation, and increases the fruit yield. Moreover, when trees were grown in areas where there is no power line, didymosity rate tended to be lower.

PP-30 COLLECTION OF THE PERSONAL DADDY OF THE PATIENTS WHO UNDERWENT BONE MINERAL DENSITOMETRY IN OUTSKIRTS OF MERSIN

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Aim: Our purpose was to collect the personal daddy of the patients who were living in the outskirts of Mersin and who underwent dual x-ray absorptiometry (DXA), in order to make an epidemiological survey.

Material and Method: Face-to-face survey method was used to evaluate the patients who underwent DXA in a public hospital during a period of seven months. The daddy obtained were presented as rates.

Results: The majority (about 98%) of the patients were women and more than 60% of the patients belonged to perimenopausal or postmenopausal age group. The majority (about 80%) of the patients did not have a proper/high education with lower soci-cultural backgrounds, haven't undergone regular DXA examinations before and did not have adequate knowledge about osteoporosis. A relatively large population (83%) were non-smokers but they also were not doing any kind of sports at all.

Discussion: With higher soci-cultural backgrounds which means consciousness about osteoporosis, the patients are expected to have a higher level of understanding for the necessity to undergo annual DXA examinations and to do exercise. Such cross-sectional surveys should be performed at every DXA center to better understand the soci-cultural level of the patient groups in that local area which will be helpful for educating them about osteoporosis, for promoting them to undergo bone mineral densitometry every year and for getting them involved in sportive activities.

PP-31 ECOLOGICAL PATHOLOGY OF HIRUDOTHERAPY

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Introduction: *Hirudo medicinalis* L., 1758 (medical leech) has been known in unconventional medicine since the 18th century as hirudotherapy factor and in recent time it is used for the production of many biomolecules, such as hirudin. In medicine leeches cultured under sterile conditions are used in hospitals to support treatment of numerous diseases e.g. hypertension, heart diseases, difficult-to-heal wounds.

Material and Methods: The medical leech is found in small water reservoirs: ponds, peat ponds, lakes, and reservoirs situated among meadows, in old riverbeds and ditches. Less frequently it can be found in slow flowing rivers and streams. Overgrown wet banks that afford possibilities for placing cocoons are supportive for its presence as well. It is determined by the quality of leeches applied, the source of their origin, and culture and transport conditions.

Results and Discussions: Various microorganisms, including those that are pathogenic and potentially pathogenic, accompany leeches living in various open water reservoirs. They may infect the body of a leech and be transferred to the blood of future hosts, thereby also to patients. Then, they may become a causative agent of such diseases as cellulitis, eye infections, arthritis, myocarditis, peritonitis, meningitis and sepsis. As a result, the main aim with its contents of this study is to analyze the ecological pathology of hirudotherapy.

Keywords: *Hirudo medicinalis* Ecology Pathology, Hirudotherapy, Health

INTERNATIONAL CONGRESS OF HEALTH AND ENVIRONMENT

October 23-25, 2017

Adana-TURKEY

PP-32 INVESTIGATION OF MEDICAL WASTE MANAGEMENT AND DISPOSAL PROCESS: KONYA EXAMINATION

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Medical waste is the general name of wastes from infectious, pathological and cutting-piercing wastes that arise during the processes in health units. Healthcare providers and healthcare organizations use a large number of devices and materials to reduce health problems and provide human health services. Medical waste is generated by the use of these devices and materials. Medical wastes should be disposed in such a way as not to harm the environment and human health in consideration of environmental regulation and cleanliness. This research was conducted to examine the disposal process of medical wastes and to establish an effective medical waste management process. Observation and interviewing methods were used in the research and medical waste reports and data were obtained. In the study, it was investigated whether the medical waste facility is close to the settlement, how various environmental regulations are made and what these regulations are. As a result, rational management in the medical waste management and disposal process must be adopted, job safety and environmental safety must be ensured.

Keywords: Medical Waste, Medical Waste Management, Medical Waste Disposal Process

PP-33 CHIRAL DISCRIMINATION PROPERTIES OF CHIRAL CALIX[4]ARENE DERIVATIVES FOR ASCORBIC ACID

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Vitamins are simple structured biocatalyst compounds found naturally in foods which play an important role in the regulation and maintenance of body functions [1]. One of them is vitamin C and it is also called as ascorbic acid.

Ascorbic acid is an indispensable component in terms of healthy for teeth, bone and skin. Also, it is a carbohydrate-like chemical substance that participates in metabolic functions such as absorption of iron, collagen synthesis, maintenance structure of blood vessels, formation of some amino acids, hormone synthesis and secretion of the adrenal glands. Ascorbic acid has two isomers which are called as L-ascorbic acid and D-ascorbic acid (Fig. 1). Although D-ascorbic acid is in an inactive form, the L isomer is in a biologically active form. So, the discrimination of these isomers is an important issue in terms of human health.

In biosensor applications, QCM system, one of the acoustic transducers, is used for the detection of important analytes as biological. QCM system allows to sense even the nanogram mass changes resulting from the interactions between the analyte and the sensor surface [2]. There are limited numbers studies about macromolecules used as sensing molecules in biosensor studies. One of them is calixarenes which can be widely used in different application fields due to their unlimited derivatizations and three-dimensional structures [3]. In this study, different chiral calix[4]arene derivatives were prepared (Fig. 2) and used as sensing materials on a QCM system for chiral discrimination of L-ascorbic acid and D-ascorbic acid.

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PP-34 SOCIO-PSYCHOLOGICAL PROBLEMS OF FOREST HARVESTING WORKERS: A CASE STUDY

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Today, forestry activities are carried out on very wide areas in the world and our country. There are clear working conditions and power terrain conditions for nature conditions here. With this situation, with the geographically difficult conditions of the workplace, forestry work is one of the business sectors with the most difficult working conditions. This has also been confirmed by the ILO (International Labor Organization). Forestry workmanship is the most difficult and most basic form of workmanship of the raw materials of wood, with many different categories of opposition emerging.

Harvesting works carried out on different adverse topographical conditions and in open air conditions are also risky jobs in terms of job security. These jobs, which generally require heavy muscle load, can also cause social and psychological negative consequences for the worker due to the fact that the workplace is located far from the settlement areas and that there are very limited social impacts.

In this study, answers were given to the questionnaires prepared on the forest workers within the boundaries of the Çorum Forest Management Directorate. The questionnaire was prepared in two stages as the general situation of the workers and their socio-psychological characteristics. The obtained data were evaluated in the light of literature and statistical results were obtained. The study is mainly focused on socio-psychological problems.

In this context, socio-psychological problems will be identified and eliminated and benefits will be provided in terms of job satisfaction and job security.

Keywords: Forest Harvesting Worker, Occupational Health and Safety, Socio-psychological problems

PP-35 ANTIMICROBIAL RESISTANCE AND SENSITIVITY PROFILE OF *PSEUDOMONAS AERUGINOSA* AND PREVALENCE OF MULTIPLE ANTIBIOTICS RESISTANT (MAR) IN TRACHEAL ASPIRATES.

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Objective: A retrospective analysis of the widely used antibiotics all susceptibility testing results from *Pseudomonas aeruginosa* cultured from tracheal aspirates Mugla Sıtkı Kocman University Education and Research hospital (January to December in 2015) was performed. 30 tracheal aspirates were tested in our study.

Methods:The new BD PHOENIX automated microbiology system (Becton Dickinson Diagnostic Systems, Sparks, Md.) is designed for automated rapid antimicrobial susceptibility testing and identification of clinically relevant bacteria. MIC results previously obtained in recent clinical isolates with well-defined in isolates with well-characterized resistance mechanisms with the microdilution method were re-interpreted for the susceptible, intermediate and resistant categories using the 2012 EUCAST breakpoints.

Results: With respect to resistance pattern, the most resistant antibiotics were İmipenem 57% and Ticarcillin/Clavulanate 43%. While the other antibiotics, the sensitivity rates of *P.aeruginosa* were in the following order: Colistin 97% and Gentamicin 73%. Out of the 30 *P.aeruginosa* 5 (17%) isolates showed no antibiotic resistance. While one samples showed resistance to all of the antibiotics.

Conclusions: Our findings with regard to microbial resistance suggest that İmipenem and Ticarcillin/Clavulanate should not be considered effective agents for the treatment of *P.aeruginosa* tracheal aspirates infections in the hospital setting because of the high resistance rates observed in this study. Colistin and Gentamicin are considered potent agents in the treatment of infections caused by multiresistant *P.aeruginosa*.

Keywords: *P.aeruginosa*, antibiotic resistance, tracheal aspirates.

PP-36 THE RELATIONSHIP BETWEEN STATE AND TRAIT ANXIETY LEVELS AND VITAMIN D LEVELS OF UNIVERSITY STUDENTS

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Objective: The aim of this study is to determine the relationship between state and trait anxiety levels and vitamin D levels of university students.

Methods: The sampling of this study consists of 156 students studying at different departments of Toros University Vocational School. The STAI FORM TX-1 questionnaire was used to measure the state anxiety and the STAI FORM TX-2 questionnaire was used to measure trait anxiety of students. Vitamin D levels of students were measured in Mersin Toros State Hospital Laboratory.

Results: The relationship between state and trait anxiety levels and vitamin D levels in the study was examined using Spearman correlation, since the data do not show normal distribution. As a result of the analysis, there was no significant relationship between state anxiety level and vitamin D level ($p > 0.05$) but there was a significant relationship between trait anxiety level and vitamin D level with a negative correlation ($p < 0.05$).
Discussion: There was a negative correlation between continuous anxiety and vitamin D levels. There was a significant relationship between trait anxiety level and vitamin D level with a negative correlation. Spending hours in the classrooms when the sun rays that activate vitamin D are at optimum level, not being able to see the sun due to short breaks, using high-factor sun protection lotions for fear of skin cancer increases vitamin D deficiency and leads to anxiety in our lives. There are studies showing that decreased vitamin D levels are associated with anxiety, depression and schizophrenia. Investigations indicate that lack of vitamin D may play a role in the etiology of mood disorders. The presence of vitamin D receptors (VDR) in several regions of the brain of supports this association.

Conclusion: It has been concluded that vitamin D supplementation is important in reducing the trait anxiety especially in students.

PP-37 EFFECTS OF GALLIC ACID ON PLASMA THIOL/DISULPHIDE HOMEOSTASIS BALANCE OF RAINBOW TROUT (*ONCHORHYNCHUS MYKISS* H, 1843)

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Aim: In this study, we aimed to investigate the effect of the Gallic Acid on Thiol/Disulphide homeostasis in *Onchorhynchus mykiss* in experimental condition.

Material Mehtods: All experiments carried out on 30 male rainbow trout (*Onchorhynchus mykiss* H., 1843). Fish divided into 3 equal groups each 251.67±5.77 g and 27.83±0.82 cm as following. Grup I was treated with saline (% 0.9 NaCl) by orally. Grup 1 with 12.5 mg/kg Gallic acid orally; Group 2 with 25.0 mg/kg Gallic acid were applied for 20 days. Blood samples were collected from all samples to evaluate thiol/disulphide homeostasis in fish. Thiols levels were measured in serum samples.

Results: Native thiol and Total thiol levels were significantly higher in gallic acid groups (Group 1 and 2) (P<0.001 and P<0.01, respectively) than those in Control Group. Nativetiyol/total tiyol ratio in the Group 1 and 2 were significantly higher than that of the Control groups (p<0.001). Group2 had significantly lower levels of disulphide than that with Group1 and Control group (P<0.01). Disulfite/Native thiol ratio in Group 2 was significantly higher than that of Group1 and Control (P<0.001).

Discussion and Conclusion: The present study display association between Gallic Acid treatment and thiol/disulphide homeostasis in rainbow trout.

Keywords: Rainbow trout, Gallic Acid, Thiol, Disulphide

PP-38 HEALTH RISKS RELATED TO COOKING FUMES EXPOUSURE AMONG KITCHEN WORKERS

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"Cooking fume" is used to express the visible smoke that occurs during cooking, and include the term "cooking oil fumes". Cooking oil fumes are the main source of particulate matter and other possible pollutants in the kitchen air. Cooking oil fumes are considered as major indoor pollutants. Indoor kitchen air contain particulate matter in different aerodynamic diameters. The average particle concentration by cooking increases by 20-40 times in the kitchen and by 10 times in other areas around the kitchen. In addition to these pollutants, cooking oil fumes contribute significantly to the content of polycyclic aromatic hydrocarbons (PAH) in the interior kitchen air.

The composition of cooking fumes varies widely depending on such factors as the composition of the raw food, cooking oils, cooking temperature, and cooking methods [1]. Food preparation practices at high temperatures, such as frying and grilling, lead to the formation of oil aerosols with aerodynamic diameters between 20 and 500 nm [8]. It is stated that cooking oil fumes contain carcinogenic chemicals such as acids, alcohols, aldehydes, PAHs, acrolein, benzo(a)pyrene, t,t,-2,4-decadienal.

In recent years, the interest in the size and composition of indoor aerosols replaced with particle characteristics, and the relationship between occupational, and environmental health risks of these particles. Hotel, and restaurant employees have an increased mortality rate from respiratory diseases such as asthma, emphysema, lung function abnormalities and lung cancer. The vast majority of kitchen workers spend at least 60% of their time at work. This perspective emerges when the magnitude of the problem. A better understanding of the relationship between kitchen air quality and the health of kitchen workers is needed.

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PP-39 PATENT OF VOLATILE OIL PRODUCTION TECHNOLOGY

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Aim: The aim of this study is to emphasize the importance of getting patent for volatile oil of *Stachys rupestris* Montbret et Aucher ex Benth. as known an medical plant.

Method: Volatile oils have been extracted from *Stachys rupestris* in a number of ways. One of the oldest methods is hydrodistillation, practised in ancient Persia, Turkey and India thousands of years ago. Dried aerial parts of each plant (100 g) were ground in a Waring blender and then subjected to hydrodistillation for 3 h according to the standard procedure described in the European Pharmacopoeia. After the extraction, the volatile oil was also analyzed by GCMS. Then a patent application was made for the technique to Turkish Patent Institute.

Results: Hydrodistillation of the aerial parts of *S. rupestris* furnished pale yellow oils in 0.1% on a dry mass basis, respectively. In all, 48 compounds were identified, 22 for *S. rupestris*, accounting for 94.6% of the total oil.

Discussion: *Stachys rupestris* is an endemic species which lives on ruins and stones locating in the highlands in Mersin city of Turkey. Its volatile oil. Like many species of *Stachys* plant, *Stachys rupestris* is used in the treatment of inflammatory diseases, rheumatic treatments, antibacterial, diuretic, anti-spasmodic, and even in the treatment of tumor diseases. Due to their ability to treat many diseases, it is rather important that the volatile oils are obtained efficiently by the correct method. **Conclusion:** To obtain volatile oil *Stachys rupestris* is possible with the method we have worked with at high efficiency.

Keywords: *Stachys rupestris*, patent, volatile oil

PP-40 OCCUPATIONAL DISEASES IN CATERING EMPLOYEES: A PILOT STUDY OF ANKARA CITY

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Introduction: Poor working condition affect the health of employees and cause occupational diseases. According to the World Health Organization (WHO), millions of people in the various sectors have occupational illnesses and most of them lose their lives.

Method: This study was planned and carried out in order to determine the risks of occupational diseases of kitchen and refectory staff employed in institutions providing catering services. The research was carried out on a 158 staff working in kitchens and refectory between the ages of 20-59 serving a university in Ankara. In the study, a questionnaire was applied to the staff, which includes questions about respiratory and allergy diseases, skin diseases and musculoskeletal diseases. The questionnaire included the Nordic Occupational Skin Questionnaire, Nordic Musculoskeletal Questionnaire, and European Community Respiratory Health Survey (ECRHS-II).

Results: It was determined that 30,6% of the subjects had respiratory symptoms and 82,6% had musculoskeletal pain. 41,3% of the subjects had symptoms related to skin diseases. It is identified that 26,9% of cooks 24,4% of waiters and 68,0% of dishwasher have eczema-related symptoms on their hands. The difference between dishwashers and other profession was statistically significant ($p < 0.01$).

Conclusion: It was observed that in the kitchens the heavy goods were often lifted and moved manually. These conditions are thought to be the factors that contribute to the development of musculoskeletal diseases. The reason why dermatitis is more common especially in dishwasher due to wet working environment, and excessive use of cleaning substances such as soap and dishwashing detergents. It is important to preventing occupational diseases in institutions to provided with catering services by the ergonomic and physical condition in accordance with the standards, employment to evaluating the physical strength and skill appropriate to the work, use of suitable work clothes for the working environment and training of the individuals in this respect.

**PP-41 ALUMINUM TOXICITY-INDUCED ALTERATIONS IN ROOT TIP MERISTEMATIC CELLS
OF *ALLIUM CEPA* L. (AMARYLLIDACEAE)**

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Aluminum (AlCl₃) toxicity is an important growth-limiting factor in soils. The main symptom of AlCl₃ toxicity is the inhibition of root growth. In this study, the possible toxic effects of AlCl₃ on root tip meristematic cells of *Allium cepa* L. were investigated.

Healthy young onion bulbs that were the same size were used in the test. The anatomical changes in root tip cells were used as indicator of AlCl₃ toxicity. Seeds were divided four groups as control (tap water) (group I), 50 µM AlCl₃ (group II), 100 µM AlCl₃ (group III) and 200 µM AlCl₃ (group IV). Onion bulbs then have been grown at room temperature for 72 h.

Results showed that AlCl₃ at all doses caused anatomical damages such as *deformed cell shapes, nonspecific vascular tissue, flattening cell nucleus, necrosis* and *a shorter length of the meristematic zone* in root tips.

These data suggest that dose-dependent an increase in anatomical damage of *Allium cepa* root tip meristem cells treated with three different concentrations of AlCl₃.

Keywords: *Allium cepa*, Aluminum, root tip anatomy.

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PP-42 NEGATIVE ENVIRONMENT: CHILDREN ARE UNDER THE FULL OF ENVIRONMENTAL RISK

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Objective: The aim of this study was to investigate the effects of environmentally harmful factors on children's future life and to investigate ways of preventing these harmful effects in children's healthy growth and development

Methods: The literature on the environmental factors affecting the health and development of children has been reviewed and the ways of affecting the harmful substances and their ways of protection have been examined. In particular, the factors that caused children to be more affected by the negative environment were examined. Thus, evaluations were made to establish healthy environmental conditions.

Results : Nowadays, it is observed that children encounter many environmental harmful substances, especially chemical harmful substances, much more than the old ones, and this risk is increasing more and more. Even a mother's abdomen, which is a safe environment, can be exposed to harmful environmental substances. Chemical toxins, which are both soluble in oil and have a low molecular weight, can easily be passed through the placenta and become harmful. The American National Academy of Sciences has revealed that more than 28% of developmental disorders occurring in children are observed to have adverse environmental factors. Children who are in a process of continuous growth and development and whose cell counts are constantly increasing have been found to be at serious risk from this point of view.

Conclusions: Environmental pollution today has become a problem that threatens the health of people all over the world in the meantime. The awareness of awareness of both social and individual measures arises to reduce environmental pollution as much as possible and to protect children from the effects of environmental hazards.

PP-43 METAL BIOACCUMULATION/TOXICITY TEST FOR METAL INDUSTRY WASTEWATERS

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Metal industry wastewaters include different types of heavy metals with respect to the metal production processes and products. There are several methods used for metal production industry such as refining and smelting operations. Both of them may produce air emissions like SO₂ and particulate matter, wastewater originating from floatation and leachate, and other wastes like sludge and slag. Heavy metals of metal industry wastewaters are nickel, brass, chrome, gold, cadmium, copper, brass, and silver. Most of them may give severe damage to human and environment. For example, chrome ion leads to lung cancer, stomach ulcer, kidney and liver function disorders and death on human. Thus, heavy metal containing wastewaters could be very dangerous. Besides, plant species which have capability of accumulate heavy metals can be an option to bioaccumulate metal industry wastewaters while plant species which are sensitive to heavy metals can be used as a plant for phytotoxicity tests. In this study metal industry wastewaters were analysed in order to determine plant species whether they are sensitive or tolerant to heavy metals. During analysis phytotoxicity tests were conducted with different plant species.

PP-44 ENVIRONMENTALIST PRODUCTION OF ZnSe THIN FILMS VIA CHEMICAL BATH DEPOSITION

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Recently, there has been significant interest in developing new polycrystalline thin film semiconductors. ZnSe is an important semiconductor material with a large band gap (2.7 eV) which has a large potential use in thin film devices, for example photoluminescent and electroluminescent devices and as an *n* type window layer for thin film heterojunction solar cells. There are numerous methods available for thin film production. Among them, the chemical bath deposition (CBD) method has shown a particular significance as this method is proved to be least expensive, low temperature and a non-pollutant one. This technique is performed in a batch reactor, requiring only a substrate to be immersed in a solution of aqueous precursors such as metal salts, complexing agents, and pH buffers.

In the present work, ZnSe thin films have been produced by chemical bath deposition technique in different deposition times with using non-toxic complexing agent tri-sodium citrate instead of toxic hydrazine hydrate. So it is an environmentalist study. The deposition was carried out at 80°C. Effects of deposition time on structural, morphological and optical properties of ZnSe thin films have been determined by using X-Ray Diffraction (XRD), Field Emission Scanning Electron Microscope (FESEM) and UV-Visible techniques. It was observed that ZnSe thin films have polycrystalline nature and consist of nanoparticles. The band gap values of the obtained thin films are between 2.75-2.94 eV. According to these results structural, morphological and optical properties of the films were determined to vary according to the deposition time.

Keywords: Environmentalist production, ZnSe thin films, chemical bath deposition, non-toxic complexing agent.

PP-45 THE EFFECTS OF OBESITY AND AGE ON TOTAL ANTIOXIDANT/OXIDANT STATUS IN HEALTHY ADULTS

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Aim: Obesity is a serious social and health problem and leads to several diseases including cardiovascular, diabetes mellitus and cancer. Unfortunately, the number of obese children and adult has increased significantly over the last 20 years in Turkey. Previous studies showed that oxidative stress is one of the factors that cause obesity. Oxidative stress is defined as imbalance between oxidants and antioxidants. Furthermore, aging is considered as a biological process closely associated with oxidative stress. Therefore, the aim of this study was to estimate the total antioxidant capacity (TAC) and total oxidant status (TOS) of plasma among healthy blood donors depending on age and weight in blood center of Cukurova University.

Material and Method: The study was conducted by weight and age on 96 male donors. The patients were separated into two groups between the ages of 20-39 and 40-59. In addition the donors were divided into different groups respectively to their body mass index <25, normal weight, and >25, obese. Peripheral blood was collected into EDTA-containing tubes for analyses. The TAC and TOS levels were determined by Rel Assay Diagnostics kits (RLOO17, RL0024).

Results: Total oxidant status in obese donors were found significantly higher than normal weight donors in 20-39 and 40-59 age groups. Also, TOS level in 40-59 age group were found higher than in 20-39 age group for obese and normal weight donors. Total antioxidant capacity (TAC) in obese donors were found lower normal weight donors in 40-59 age group while TAC level did not significantly different between obese and normal weight donors in 20-39 age group. Also, TAC level were found similar when donors were evaluated for age.

Conclusion: Results of this study showed that there is high levels of total oxidant status together with low total antioxidant capacity detected in obese donors for 40-59 age group indicate elevated oxidative stress. Also, these findings suggested that antioxidant activities are affected with aging and obesity.

Keywords: Aging, TAC, TOS, Obesity, Healthy Adults

PP-46 PURIFICATION AND CHARACTERIZATION OF CARBONIC ANHYDRASE ENZYME FROM GOAT KIDNEY: THE TOXICOLOGICAL IMPACTS OF SOME HEAVY METALS ON ENZYME ACTIVITY

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Objective: In present study, the carbonic anhydrase was purified and characterized from goat kidney for the first time. Also, the toxic effects of some heavy metal ions on carbonic anhydrase enzyme activity were investigated.

Material and Methods: The purification procedure consisted of a single step affinity chromatography on Sepharose 4B-L-tyrosine-sulfanilamide. For determination the enzyme purity and subunit molecular mass, sodiumdodecyl sulphate polyacrylamide gel electrophoresis (SDS-PAGE) was performed and single band was observed. In addition, the inhibitory effects of some heavy metal ions (Pb^{2+} , Co^{2+} , Fe^{2+} , Ag^+ and Cu^{2+}) on goat kidney tissue CA enzyme activities were determined.

Results: The enzyme was purified 212.27 fold with a yield of 51%, and a specific activity of 58974.6 EU/mg proteins. The subunit molecular weight of enzymes were evaluated as 28.00 kDa for kidney tissue. Some kinetic parameters of goat kidney carbonic anhydrase enzyme such as K_m , V_{max} , k_{cat} and V_0 values were obtained 4.342 mM, 0.408 EU/mL, 906.66 s^{-1} and $2.1 \times 10^5 \text{ mM} \times \text{s}^{-1}$ for the first time in this study. The inhibition order of the metals was $\text{Pb}^{2+} > \text{Co}^{2+} > \text{Ag}^+ > \text{Cu}^{2+} > \text{Fe}^{2+}$.

Discussion and Conclusion: Carbonic anhydrase enzyme was firstly purified from goat kidney. Its molecular mass was determined using SDS-PAGE method. To determine kinetic parameters p-nitrophenyl acetate was used as substrate. K_m , V_{max} , k_{cat} and V_0 kinetic values were measured and IC_{50} , K_i and type of inhibitions were determined from Lineweaver-Burk graphs. Heavy metals had adverse effects on Carbonic anhydrase enzyme was purified from goat kidney. However, the most hazardous metal was found as Pb^{2+} ion. These heavy metals can cause different toxicological effects in animals.

PP-47 ACUTE TOXICITY OF INSECTICIDES ON AQUATIC ORGANISMS (BIOASSAY TESTS ON C.U. FISHERIES FACULTY)

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Lufenuron, Abamectin, Chlorpyrifos, Lambda-Cyhalothrin and Cypermethrin; these are the insecticides which are used against insects on many cultivated plants especially on cotton, corn, vegetable, grain, citrus fruits in Çukurova Region in agricultural areas. Bioassays tests are among the research method which analyzes generally pesticides, specifically insecticides toxic effects on organisms. Standard tests are approved by international organizations like international USEPA, EEC and OECD especially for freshwater invertebrates use. In this study the researchs are summarized which are carried out by Ç.Ü. Fisheries Faculty which was investigated by bioassay of acute toxic effect about the insecticides are mentioned about their possible negative effects in aquatic environment, *Oreochromis niloticus* (L., 1754) larvae and *Daphnia magna* (Straus, 1820) for being able to be informed.

Bioassay studies which were analyzed the possible acute toxic effects of the insecticides which are used in Çukurova Region, the effect of agricultural chemicals which is carried by surface flow to still water are *D. magna* and *O. niloticus* larvae the negativity was discussed that may cause particularly in aquatic organisms, generally in the aquatic environment. In this context, publications have been compiled and evaluated. Common results from studies were discussed and significance of it is interpreted from the standpoint of aquatic ecological system.

LC₅₀ values for *O. niloticus* larvae; Lufenuron 24-h LC₅₀ 1.80±0.06 mg l⁻¹ and 48-h LC₅₀ 1.77±0.04 mg l⁻¹, Chlorpyrifos 24-h LC₅₀ 0.40±0.02 mg l⁻¹, Lambda-Cyhalothrin 24-h LC₅₀ 6.80±0.63 µg l⁻¹ and Cypermethrin 24-h LC₅₀ 15.88±0.65 µg l⁻¹; LC₅₀ values for *D. magna*; Abamectin 24-h LC₅₀ 0.020 µg l⁻¹ and 48-h LC₅₀ 0.0043 µg l⁻¹ have been reported. Consequently, it was observed that the LC₅₀ value reduced as the application time of the pesticide was extended. Differences are caused by fish biology, living conditions, physicochemical properties of water, method difference. The results to be a guide for the protection of the aquatic ecosystems.

Keywords: Bioassay, Insecticide, *Oreochromis niloticus*, *Daphnia magna*, LC₅₀.

**PP-48 INVESTIGATION OF IMIDACLOPRIDIN TOXICITY THAT CAUSE
HISTOPATHOLOGICAL CHANGES IN HEPATOPANCREASES OF *Melanopsis praemorsa*
LINNAEUS, 1758 (GASTROPODA:PROSOBRANCHIA)**

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Aim: It was aimed to determine the histopathologic changes in the hepatopancreas tissues of *M. praemorsa* samples, after imidacloprid (insecticide) application in sublethal concentrations.

Method: *M. praemorsa* samples used as test material were subjected to laboratory adaptation for 30 days. After adaptation separated into 3 groups.

Group I. Control group

Group II. Exposed to 4.01 mg/L imidacloprid concentration

Group III. Exposed to 40.16 mg/L imidacloprid concentration.

Sublethal doses of imidacloprid were administered to the groups for 28 days. In order to determine the histopathological changes, histological preparations of hepatopancreas tissues of the snails taken during the 7th, 14th, 21th and 28th days of the experiment were prepared from groups. Histopathologic changes were interpreted and photographed in a light microscope.

Results: After examining the hepatopancreas tissues of the specimens at the end of the experimental process; lesions like dilatation of hemolymphatic spaces between tubules, detachment of hepatopancreas cells, amoboid infiltration, narrowing in tubular lumens, connective tissue atrophy, increase in amoebocytes and lipid vacuoles, swelling in basophilic cells and increase in yellow granules were observed.

Discussion and Conclusion: Due to the exposure of *M. praemorsa* specimens to imidacloprid at given concentrations for 28 days, histopathological changes in hepatopancreases were found to increase in proportion to dose and duration. Sublethal values give information about changes in the structural and biological functions of the specimens.

These changes indicate the health status of aquatic organisms as well as the purity of the water in a given environment. We hope that this data will help us avoid the possible pollution in the coming years and find different solutions.

Keywords: *Melanopsis praemorsa*, Imidacloprid, hepatopancreas, histopathology, snail.

PP-49 CADMIUM TOXICITY THAT CAUSE HISTOPATHOLOGICAL CHANGES IN *Lymnaea stagnalis* LINNAEUS, 1758 (GASTROPODA:PULMONATA)

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Aim: Gastropods, potential bioindicators of fresh water pollution, are well known to be a good model for assessing the effects of pollutants. In our study, it was aimed to determine the histopathologic changes which may occur in tissues due to accumulation of cadmium at different concentrations in *L. stagnalis* species.

Methods: *L. stagnalis* samples used as test material were subjected to laboratory adaptation for 30 days. After adaptation, the snails were separated into 5 groups.

Group I. Control group

Group II. Exposed to 7.92 mg/l cadmium concentration

Group III. Exposed to 15.85 mg/l cadmium concentration

Group IV. Exposed to 31.7 mg/l cadmium concentration

Group V. Exposed to 63.4 mg/l cadmium concentration

Sublethal doses of cadmium (Cd^{+2}) were administered to the groups for 28 days. In order to determine the histopathological changes, histological preparations of the foot tissues taken during the 7th, 14th, 21th and 28th days of the experiment were prepared from groups. Histopathologic changes were interpreted and photographed in a light microscope.

Results: After examining the foot tissues of specimens at the end of the 28 days experimental process; desquamation in epithelium, atrophy in muscle fibrils, increase in lipid vacuoles and in mucous cells and necrosis were observed.

Discussion and Conclusion: Due to the exposure of *L. stagnalis* specimens to Cd^{+2} at sublethal concentrations for 28 days, histopathological changes in foot tissues were found to increase in proportion to dose and duration.

As a result, cadmium is one of the most dangerous heavy metal for aquatic life. Our study suggests that sublethal concentrations of Cd^{+2} cause destructive effects on body tissues of *L. stagnalis*. Although much progress has been made in environmental waste management, heavy metals still pose serious health risks for living organisms.

Acknowledgement: This study was supported by the project of Dicle University DÜBAP 07-02-19.

Keywords: *Lymnaea stagnalis*, Cd^{+2} , foot, histopathology, snail.

PP-50 EFFECTS OF ALUMINIUM TOXICITY ON SESAMUM INDICUM

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Aluminum is the most abundant metal and the third most abundant element in the earth's crust. Aluminium toxicity is one of the major factors that limit plant growth and development in many acid soil. Sesamum indicum (sesame) is a flowering plant that grows throughout the world and is cultivated for its edible seeds. Therefore, it is essential to investigate the effects of Al toxicity on some physiological and biochemical characteristics of sesame seedlings. Sesame seeds sterilized with 5% sodium hypochloride solution for 15 min, and washed with distilled water three times and then were germinated in perlite. After germination periods, sesame seedlings were then transferred to 2 L plastic vessels containing aerated nutrient solution. After seedlings were acclimatized, they were supplied with 0, 5, 25 and 50 mg/L Al. At the end of the Al application period, the seedlings were harvested and analyses were carried out. Growth and development of the seedlings were reduced by Al. The study indicated that Al toxicity on photosynthetic pigments and protein contents in the seedling parts (root, stem and leaf) were dependent upon Al concentration. In general, toxicity was also increased with increasing Al concentration. Increases in H₂O₂ and malondialdehyd contents showed that Al concentrations caused oxidative stress. It is possible that increased non-protein SH groups and total phenolic contents by Al may be due to their roles in Al stress response.

Keywords: Al toxicity, Sesamum indicum, physiological and biochemical effects

PP-51 PHYSIOLOGICAL RESPONSES OF *OCIMUM BASILICUM* VAR. *PURPURASCENS* TO ALUMINIUM TOXICITY

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The aim of the present study is to evaluate the physiological effects of Al application on the *Ocimum basilicum* var. *purpurascens* (purple ruffles) seedlings, which were grown in a climate chamber as hydroponically. For experiment, *Ocimum basilicum* var. *purpurascens* seeds were used. The seeds sterilized with 5% sodium hypochloride solution for 15 min, and washed with distilled water three times and then were germinated in perlite for under 24 ± 1 °C. Purple ruffles seedlings were then transferred to 2 L plastic vessels containing aerated nutrient solution. After seedlings were acclimatized in nutrient solution, they were supplied with 0, 5, 25 and 50 mg/L Al. The seedlings were harvested after 7 days than contents of chlorophylls (a and b), carotenoid, anthocyanin, total protein, total phenolics, total soluble carbohydrates, non-protein –SH groups, H₂O₂ and malondialdehyde (MDA) were investigated. Root, leaves and stems were separated and dried at 80 °C in order to determine dry weight and Al³⁺ content. Because of Al toxicity, growth and development of the seedlings were reduced. A dose-dependent reduction was found in chl-a, chl-b and carotenoid contents of the seedling leaves. However, anthocyanin content did not significantly change. In addition to this, protein content was decreased by Al³⁺. Total soluble carbohydrate contents were increased by Al³⁺. The maximum increase was determined for root in 5 mg/L Al³⁺ as 39,43%, for stem in 50 mg/L Al³⁺ as 94,98%, and for leaf in 50 mg/L Al³⁺ as 14,27%. Besides, a dose-dependent increase was generally determined on the contents of MDA, H₂O₂, total phenolics and non-protein –SH groups. These results suggest a possible Al-induced oxidative stress in purple ruffles seedlings.

Keywords: *Ocimum basilicum* var. *purpurascens*, Al toxicity, physiological effect, growth

**PP-52 BIOCHEMICAL COMPOSITION AND HEALTH EFFECTS OF HYMENOPTERA
(INSECTA: ARTHROPODA) VENOM**

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Introduction: Hymenoptera (Insecta: Arthropoda) venom is a complex mixture of proteins, peptides and low molecular components. The main components are proteins and peptides. The composition of fresh and dried venom differs mainly in regards to the volatile components; the overall biological activity is similar. In this study, It is intended to detect the Biochemical Composition and Health Effects of Hymenoptera (Insecta: Arthropoda) Venom.

Material and Methods: The Hymenoptera are the third largest orders of insects, comprising the sawflies, wasps, bees and ants. Over 150,000 species are recognized, with many more remaining to be described. Hymenopterans range in size from very small to large insects, and usually have two pairs of wings.

Results: In the majority, ovipositor is modified for piercing, and, in some cases, is several times the length of the body. In some species, the ovipositor has become modified as a stinger, and the eggs are laid from the base of the structure, rather than from the tip, which is used only to inject venom. The sting is typically used to immobilise prey, but in some wasps and bees may be used in defense. Stings of insects from the order Hymenoptera, which includes several species of bees, hornets, wasps and yellow jacks, have been implicated in cases of human envenomation.

Discussions: In general the victims present only local allergic reactions after one or a few stings. However, after a massive attack with hundreds or thousands of stings, a systemic envenomation may occur. The main venom activities are hemolytic, myotoxic, cardiotoxic and nephrotoxic and clinical manifestations can be divided into allergic and systemic reactions.

Keywords: Insecta, Hymenoptera, Venom, Peptides, Toxicology, Apitherapy, Health

PP-53 THE EFFECTS OF BURNING STUBBLE ON THE ENVIRONMENT

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After the harvest, the plant remains left in the field are called stubble. It is a common method in Turkey to destroy plants by burning parts such as roots, stems, branches and leaves. Farmers tend to burn stubble because of the time limit for planting second crops. Another reason for the farmers to burn stubble is the lack of agricultural equipment and the high cost. Burning stubble has many harmful effects on the environment and nature. Soil fertility decreases, soil erosion causes forest fires, environmental pollution increases, soil water holding capacity decreases because of burning stubble. As a result of stubble burning, the loss of carbon (C) and nitrogen (N) in the soil is increasing. Therefore, more fertilizer is added to increase the fertility of the soil, which causes water losses in the soil and leads to a decrease in the productivity of the soil. Biomass burning is one of the most important sources of air pollution in the atmosphere. It is estimated that human beings are responsible for 90% of biomass fires. The disposal of agricultural wastes by burning has increased in the last 10 years. Burning vegetative materials, which contain hydrocarbons and olefins, release air pollutant gases. Ethylene is one of the olefins that cause air pollution and damages plants even at very low concentrations. As a result of burning stubble, the mixing of such gases into the atmosphere does not only cause global warming, but also can lead to breathlessness problems, allergies and asthma attacks in terms of human health. Instead of burning stubble, better seed bed preparation and tillage can be done using modern farming techniques.

Keywords: stubble burning, air pollution, environment, health

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PP-54 PLASTICS

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Plastic industry, in economic terms is recognized as a global success story. Unfortunately, it is not possible to mention the same success in terms of environmental health.

World plastics production, which was 1,5 million tons in 1950, was 324 million tons in 2015, and in EU 0,35 million tons and 58 million tons, respectively. In 2015, Turkey's plastic production which was equal to 2.7 percent of world plastic production, was 8.6 million tons. In total plastics production, PE (LDPE, LLDPE and HDPE) ratio is the first order with about 32%.

In 2012, 25 million tons of plastic waste was produced in Europe. Approximately 62% of this has been evaluated in recycling and energy production. The remaining 38% equivalent to 9.5 million tons was given to the environment as waste solid. In Turkey, approximately 5 million tons of packaging waste was produced in 2015. 1.3 million tons corresponding to 26% of these wastes have been recycled. The remaining 3.7 million tons were disposed of as solid waste.

Visually, plastic wastes are a problem for human habitats, but at the same time they have significant impact on wildlife habitat. Most of the documented effects are on the marine environment. These effects are circulation and ingestion by wildlife. One of the most difficult effects, but at the same time potentially the most significant is the effect of chemicals associated with plastic waste. There are various chemical substances present in the plastics material itself that have been added to give certain properties such as bisphenol A, phthalates and flame retardants. They all know that they have adverse effects on human and animal health, primarily affecting the endocrine system. There are also toxic monomers linked to cancer and reproductive problems.

**PP-55 ALLELOPATHIC EFFECTS OF ANTHEMIS HAUSSKNECHTII BOISS. ET. REUTER VE
ROSMARINUS OFFICINALIS L. EXTRACTS ON SEED GERMINATION AND GROWTH OF
BREAD WHEAT (*TRITICUM AESTIVUM* L.)**

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Allelopathy is defined as the beneficial or harmful influence of chemical substances released by plants that can alter the growth and development of nearby plants or microorganisms. Allelochemicals may be present in all plant organs, including leaves, flowers, fruits, roots, rhizomes, stems and seeds, some of which can store these compounds. In this study, allelopathic effects of *Anthemis haussknechtii* Boiss. et. Reuter ve *Rosmarinus officinalis* L., on seed germination and growth of bread wheat (*Triticum aestivum* L.) were determined. In this purpose, different concentrations (0, 1, 3, 10, 30 ve 100 mg/ml) of ethanolic extracts of daisy (*A. haussknechtii*) and rosemary (*R. Officinalis*) were investigated on during 7-days. Considering the germination rate, depending on the concentration of the plant extract, germination rates were decreased 1-100 mg/ml daisy extract. The rates in rosemary extracts of 1-3 mg/ml concentrations were decreased, and germination was not observed in 10-100 mg/ml concentrations. Seedling growth and development were affected by the plant extracts as well. Thus, it may show that these extracts have allelopathic effect in wheat.

Keywords: Allelopathy, Germination, Growth., Daisy, Rosmarin, *Triticum aestivum*

PP-56 THE EFFECTS OF QUINALPHOS ON ZEBRAFISH LIVER ORGANOTYPIC TISSUE CULTURE

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As being a broad-spectrum, organophosphorus insecticide and acaricide, quinalphos is widely used against a range of pests, and has a great threat on aquatic systems. Although the methods for detecting and predicting of the harmful effects of chemicals on non-target organisms are traditionally perfected by in vivo experiments, cell culture methods that being used widely in recent decades is also an important tool for these kinds of research. In order evaluate the effects of quinalphos on liver organotypic culture system of zebrafish, tissue cubes (1-2 mm³) were prepared by dissection and slicing of liver tissues, embedded in agarose and cultured. The cubes were exposed to three different concentrations of quinalphos (2, 4 and 8 mg/L) for 24 and 96 hours. By performing comet assay as an emerging tool for cytotoxicity, it was detected that quinalphos causes DNA damage. Moreover, some serious tissue damages and necrosis were observed by staining H&E. Increased levels of catalase, superoxide dismutase and glutathione-s-transferase were also measured. All of these parameters were noted as concentration- and time-dependent. Our data suggest that organotypic liver tissue culture of zebrafish is a practical alternative to whole fish.

INTERNATIONAL CONGRESS OF HEALTH AND ENVIRONMENT

October 23-25, 2017

Adana-TURKEY

PP-57 ALLANTOIN METABOLISM AND BIOACTIVITY IN LIVING THINGS

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This review provides an introduction allantoine metabolism and bioactivity in living things. Allantoin (2,5-dioxo-4-imidazolidinyl urea; it is also called 5-ureidohydantoin or glyoxyldiureide and is the diureide of glyoxylic acid. It is a product of purine metabolism and known since long ago to exist in nature, for example, in allantoic and amniotic fluids, in fetal urine and in many plants and bacteria. Allantoin is active in skin-softening and rapid skin cells regeneration. It removes corneocytes by loosening the intercellular kit or the desmosomes (protein bridges) that maintain the adhesion of corneocytes to each other. It then exfoliates dry and damaged cells and boosts the radiant appearance of the skin, whose surface becomes smoother and softer. Due to these properties, allantoin has been used in cosmetic industry in several forms (e.g. lotions, creams, suntan products, shampoos, lipsticks, and various aerosol preparations), as well as in topical pharmaceutical preparations for treatment of skin diseases for many years.

This review will give information about structure of allantoin and its bioactivity.

Keywords: Allantoin, Skin Cells Regeneration, Bioactive Properties

**PP-58 CALLUS INDUCTION AND OPTIMIZATION OF TISSUE CULTURE CONDITIONS IN
SMALL FLOWERED WILLOW HERB (EPILOBIUM PARVIFLORUM SCHREB)**

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Small flowered willow herb (*Epilobium parviflorum* Schreb) has been frequently used as a folk medicine to cure prostate diseases, especially Bening Prostatic Hyperplasia (BPH). It has been reported that one of its substances, Oenothain B is a strong inhibitor of Herpes Simplex Virus (HSV-1) and Human Immunodeficiency Virus (HIV). Determining optimum tissue culture conditions is essential to increase pharmacologic substances, genetic manipulation and *in vitro* production of *E. parviflorum*.

In this study, various explants of *E. parviflorum* were cultured on semi-solid MS media containing factorial combinations of plant growth regulators. Callus induction from hypocotyl, cotyledon, petiole and leaf explants was achieved on media containing 2,4-dichlorophenoxy acetic acid (2,4-D) and kinetin (KIN). All other growth regulator combinations [α -naphthalene acetic acid (NAA) \pm benzylaminopurine (BAP), NAA \pm thidiazuron (TDZ), indol acetic acid (IAA) \pm Zeatin (ZEA)] tested failed to respond. The best results with cotyledon- and petiole- derived callus were obtained from MS medium supplemented with 1.0 mg/l 2,4-D + 0.1 mg/l KIN and 2.0 mg/l 2,4-D + 0.2 mg/l KIN. It was observed that B5 basal medium was more effective than MS basal medium for producing seedling and the most effective seed sterilizing solution was 25% (v/v) sodium hypochlorite (NaOCl). No plant regeneration was observed in either callus induction or during the sub-culturing stage. This is the first report on *in vitro* tissue culture study within the genus *Epilobium*.

PP-59 THE EFFECT ON THE DIVERSITY OF SPECIES ILLEGAL FISHING ACTIVITIES IN ASI RIVER

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Introduction: The Asi River is one of the most important sources system that holds very important and endemic species in terms of inland water fisheries management. There are many fish species (Cyprinidae, Clariidae, Poeciliidae, Cyprinodontidae, Cobitidae and Mugilidae species belong to the family) caught in both recreational and fishing operations in this river system.

Material and Methods: The research area contains the Asi River and its branches. Gölbaşı, Tahtaköprü, Yarseli Dam, Kavaslı, Güzelburç, Büyükaraçay, Küçükaraçay, Afrin, Karasu, Tavla and Meydan stations were selected in the fishermen interviews. In order to determine the different local legal and illegal catching methods, interviews were conducted face to face with local fishermen. Registry of Hatay Agriculture Ministry Department were used for determination of the amount of catching. Both data are compared.

Results and Discussion: Especially, fixed traps are generally set up in shallow sections of Büyükaraçay, Küçükaraçay, Demirköprü, and Tavla. Caught fish are mostly eel fish (*Anguilla anguilla*), cat fish (*Clarias lazera*), and carp (*Cyprinus carpio*). The local fisherman, who are in the process of obtaining more products, can avail themselves to the river bed without any legal permission. Unfortunately, catching of all species that migrate along river. This condition significantly reduces the biodiversity of the Asi River.

Keywords: River Asi, Fixed settle trap, Illegal Fishing Gear, Biodiversity

PP-60 AN APPROACH FOR INCREASING BIOLOGICAL DIVERSITY IN THE CITIES: BIRD AND BUTTERFLY FRIENDLY LANDSCAPE DESIGNS

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Conserving and improving biodiversity in cities is an important global issue as urban environments play a role in the conservation of local or regional species. Within this research it is aimed to develop the landscape design criteria in urban green areas for protecting bird and butterfly species, improving habitat requirements, in the city of Gaziantep. The research has been realised within three steps. In the first step, green areas have been classified and digitized by using urban development plan. In the second step, green areas in the city have been analysed considering their capacity to create a green infrastructure for improving bird and butterfly life. In the final part of the research, some proposals have been developed on bird and butterfly friendly landscape designs. The results revealed that green areas in the city consist of urban parks by 36%, other public spaces by 34%, afforested areas by 24%, and cemeteries by 6%. It is put forward that public spaces also should be used to develop habitat quality throughout the city, as well as urban parks. Transportation routes and water lines should be used as corridors to connect green area parcels with each other for improving habitat quality. The results revealed that the distribution of green fields in the city, the planting and other application techniques in park areas also play the important role to create the suitable living areas for bird and butterfly species.

INTERNATIONAL CONGRESS OF HEALTH AND ENVIRONMENT

October 23-25, 2017

Adana-TURKEY

**PP-61 DEVELOPING LANDSCAPE PLANNING AND DESIGN PRINCIPLES FOR THE
PROTECTION OF URBAN STREAMS: A CASE STUDY IN THE CITY OF KAHRAMANMARAS**

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Streams have important functions, such as forming suitable habitats for flora and fauna, runoff regulation, improvement of microclimate conditions, creating recreation areas and providing linkages between different places and lands. However, streams are faced with the risk of losing these functions due to the environmental problems caused by human activities, especially in urban areas. Within this study, which has realised in the city of Kahramanmaraş by using geographic information systems, land use structure in stream bed and surrounding area have been examined, and streams have been categorized by applying a numerical assessment method, to analyse the environmental and physical characteristics of the streams. The results of the assessment based on land use structures revealed that environmental and physical qualities of streams have become inadequate in terms of natural functions due to rapid urbanization and intensive agricultural activities. With the aim of improving the protection of streams and increasing their contribution to the city ecosystem, restoring deteriorated areas of river systems and integrating streams to urban fabric in an ecological network were recommended.

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PP-62 THE ROLE OF GREEN AREAS FOR IMPROVING URBAN MICROCLIMATE

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Urban green areas play important role in urban areas by ameliorating ecosystem, improving microclimate, providing recreation areas, generating suitable habitats both plant and wildlife species, and increasing aesthetic values of the environment. Ecological potential is one of the most crucial feature of green areas due to increasing effects of environmental problems on human and environmental health. The aim of this research is to put forward some recommendations to increase the ecological potential of the urban green areas from the viewpoint of improving microclimatical conditions. Urban parks are the main material of this study. The study has been realised in three steps. In the first hand, general physical characteristics of the urban green areas have been examined.. In the second step, green areas have been classified according to ecological potential considering their natural features. The results revealed that ecological potential of the urban parks are not sufficient due to poor plant diversity, low permeability surface potential, and small areal coverages. To improve ecological potential of the green spaces, natural plant species should be used to establish vegetation cover, the amount of grass and soil surfaces should be increased, and areal coverages of the urban parks should be increased.

INTERNATIONAL CONGRESS OF HEALTH AND ENVIRONMENT

October 23-25, 2017

Adana-TURKEY

**PP-63 APPLYING ECOSYSTEM SERVICES APPROACH FOR SUSTAINABLE RURAL
DEVELOPMENT: THE CASE OF ADANA, KARAISALI**

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This study was conducted in the case of Adana Karaisalı, deals with the evaluation of ecosystem services in the sustainable rural development process. Effective benefit transfer of ecosystem services that provide active and passive utilization values for different sectors can make significant contributions to rural development. For this purpose, one of the most important steps is the provision of data on the relevant areas and the identification and classification of potential ecosystem services. The concept of ecosystem services emerging towards the end of the 1980's is defined as utility of ecosystems that provide to people. These benefits can be listed under headings such as food, water, fresh air, medical raw materials, recreation and cultural values. Ecosystem services which provide important data for plans and policies as well as in practice of legal policies support to make positive decisions about their environment and human health.

The presented study was carried out in a 1775 km² area located in Karaisalı region. The land cover of this research area was identified based on satellite imagery and field work. Ecosystem services were systematically classified as procurement, regulatory, cultural and support services. The impact on rural development was assessed by being associated with local social elements in the vicinity.

Keywords: Environment, Ecosystem services, Rural development

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October 23-25, 2017

Adana-TURKEY

PP-64 ENERGY EFFICIENCY and MANAGEMENT for ENERGY SECTOR

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The increase in population has clearly created great demand on energy. For this reason the most ideal way of energy management is to plan all the steps of energy production in a manner of maximizing the efficiency. By this way increase in efficiency would be beneficial both for producers and consumers. In addition to the growth of population, technological development also increases the energy demand.

Fossil fuels are primary source of reliable energy production in the whole world. However it should be kept in mind that these resources are not unlimited. Therefore, extra attention should be paid to energy management concept as well as efficient energy production from fossil fuels.

Energy management is a well-structured way of consuming energy efficiently without compromising product quality, security and environmental conditions. On the other hand, energy efficiency is defined as making improvements in energy consumption tendency by preserving life standards and energy generation amount. To summarize, energy management activities prevents the prodigality, whereas creating technology that produces same amount of product by consuming less energy is energy efficiency.

The attention must be given to energy management and energy efficiency topics by whole world. In this study, energy efficiency and management of it have been discussed in terms of production planning, production process, management after production and the habits of energy usage.

Keywords: Energy efficiency, energy management, energy saving, sustainability

INTERNATIONAL CONGRESS OF HEALTH AND ENVIRONMENT

October 23-25, 2017

Adana-TURKEY

PP-65 NEW BIOFUEL TECHNOLOGY

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Energy is one of the primary input for our daily life and industrial growth and the needs of energy has been provided of earth sources since humankind existence. In the early ages, people were using the chemical energy as heat and mechanic energy by providing it from animals and their own bodies.

Biologically Industrial Products are renewable sources that its raw materials are vegetable and animal origin and do not contain any materials that damages environment such as metal, ceramic, or synthetic polymer.

Together with increasing of fuel prices and enforcedly emission reduction needs has created great interest for biodiesel therefore the usage of biofuels for the purpose of energy consumption are opposing some scientists because of resource constraints such as hunger and living difficulties. In order to produce biofuels third generation biofuels has been initiated for the production of biodiesel and the sources of this production are mainly algae and this sources have high biomass lipid production and they are environmentally friendly. Because micro algae are not among the edible sources, they don't effect edible sources for people.

Low cost, low emissions, availability and easy access of production sources are the most important reasons that makes biofuel attractive to use in biodiesel engines. Although it is convenient to produce biogas, biodiesel and ethanol from corn, sorghum, canola, soya and sunflower in order to create alternative energy over fossil fuels, some adverse effects on food market and drinking water resources have been detected at the near past and this has shifted the studies to more environmental friendly biomass resources. In this study, new studies and developments of third generation biofuels has been discussed.

Keywords: Energy efficiency, biodiesel, biofuels, food market

**PP-66 ASSESSMENT OF POTENTIAL SOIL EROSION WITH RUSLE MODEL: A CASE STUDY OF
SALDA LAKE-BURDUR BASIN**

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Soil erosion is an important problem arising from agricultural intensification, land degradation, and other anthropogenic activities. Assessment of soil erosion is useful in planning and conservation works in a watershed or basin.

In this study, the soil loss model Revised Universal Soil Loss Equation (RUSLE) has been used to estimate soil loss in Salda Lake-Burdur basin. Salda lake is located within the border of Yesilova district of Burdur Province. It is also the deepest freshwater lake with 196m in Turkey. The parameters required to run the RUSLE model were estimated from remote sensing data and GIS.

INTERNATIONAL CONGRESS OF HEALTH AND ENVIRONMENT

October 23-25, 2017

Adana-TURKEY

PP-67 SAFE FOOD HEALTHY HUMAN

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Nutrition, accommodation and clothing are seen as the basic needs of human being. Following needs quality declining and people cannot meet their basic needs, faces many health problems. There "Universal Declaration of Human Rights" was published in 1948, the right to food was declared as a universal human right. United Nations of Food and Agriculture Organization (FAO) provides food safety; there are defined physical and economic access to adequate, safe and nutritious food to meet the nutritional needs and food priorities that all as for all people need for an active and healthy life. Although the importance of safe food for a long time, the WHO (World Health Organization), according to published reports, many people lose their lives every year with various foodborne infections and the cause of intoxication. Many of these diseases are seen as epidemics in the world.

Today, a significant change in consumer food processing and presentation approaches that have occurred and have been the most important social issues of food safety issues in recent years. If viewed from narrow perspective on the concept of food safety, it means that foods should prepare properly and does not harm people when it consumed. Broadly meaning, it is a scientific systematic cycle that defines the processing, preparation, storage and final consumption of foods to prevent biological, physical and chemical agents that cause foodborne illnesses. Briefly safety food; it is suitable for consumption by eliminating the effect which causes all kinds of deterioration and contamination.

Governments around the world should obliged to ensure that their citizens have access to safe and healthy food. In this context, from farm to fork, in order to provide safety and trusted food, should make serious efforts and investments to keep food safety.

PP-68 EVALUATION OF POMOLOGICAL AND MORPHOLOGICAL CHARACTERISTICS AND CHEMICAL COMPOSITIONS OF LOCAL PEAR VARIETIES (*Pyrus Communis* L.) GROWN IN GUMUSHANE, TURKEY

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The aim of the present research was to investigate the fruit quality of twenty different local pear varieties (*Pyrus communis* L.), namely Ahlat, Ankara, Arpa, Bildircin, Çermai, Cinci, Gelin Boğan, Hacı Hamza, Hahır, Kabak, Kızıl, Kokulu, Mehrani, Menendi, Sulu, Şalgam, Tokat Sultanı, Turşu, Yaz, and Yaz Meyriği, grown in Gumushane province in terms of pomological and morphological characteristics and chemical compositions. The local pear varieties have reached until today by sieving for many years with natural selection and consumed widely by the people. Among the pomological and morphological properties of pear varieties; the fruit mass, fruit width, fruit length, fruit stem length, fruit stem thickness, fruit kernel width, fruit kernel length, hardness of pulp, number of seeds, leaf width, leaf length, leaf stem length and leaf stem thickness were obtained in the ranges of 23.9-140.6 g, 25.8-64.3 mm, 24.0-71.8 mm, 11.8-43.9 mm, 1.8-5.4 mm, 13.3-22.8 mm, 15.0-25.7 mm, 4.3-16.8 lb, 2.8-8.0, 26.8-46.2 mm, 52.4-76.5 mm, 11.8-52.7 mm, and 0.7-1.1 mm, respectively. In addition, as chemical compositions of local pear varieties, the protein, ash, sucrose, fructose, glucose, pH, and acidity was obtained in the ranges of 1.0-5.1%, 1.0-6.4%, 0.2-14.9%, 16.5-43.8%, 0.2-34.6%, 4.1-5.6, and 0.2-1.3%, respectively. The Fe, Cu, Mn, Mg, Zn, Na, K, Ca, P and N levels were determined in the ranges of 6.0-52.0 µg g⁻¹, 1.5-11.6 µg g⁻¹, 1.2-6.8 µg g⁻¹, 16.0-765.3 µg g⁻¹, 2.8-16.9 µg g⁻¹, 3.2-138.6 µg g⁻¹, 2.7-9.2 mg g⁻¹, 0.3-2.4 mg g⁻¹, 0.3-1.8 mg g⁻¹, and 1.2-0.8%, respectively.

Both pomological and morphological results demonstrated that the local pear varieties are important in terms of rehabilitation studies and detailed selection studies on these local varieties should be performed. The chemical analyses results of the pear varieties revealed that there is no component that may be harmful to human health when consumed, and also these varieties contains the necessary amount of mineral elements.

Keywords: Local pear, Pomological and morphological properties, Chemical composition, Gumushane, *Pyrus communis* L.

**PP-69 ASSESSMENT OF HEAVY METAL AND MINERAL ELEMENT CONTENTS OF MULBERRY
SAMPLES GROWN IN GUMUSHANE PROVINCE**

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Heavy metals are particularly important compared to other chemical pollutants due to present in a large variety of resources, causing wide spread pollution, resistant against environmental conditions, having the potential to always affect biological systems and accumulate increasingly inside the organisms by penetrating easily into the food chain [1].

Gumushane hosts rich mineral deposits and there are extensive mining operations conducted in the province. Owing to the fact that it is surrounded by mountains and thus has limited air circulation, it suffers from intense air pollution. For this reason, it is wondered whether the heavy metal contents of mulberries, which are grown in the province of Gumushane and used in the manufacturing of commonly consumed food products such as molasses, jams, dried fruit rollups, mulberry pulp, fruit ice cream, churchkhela, vinegar and fruit juice concentrate, pose a health risk. For this reason, the present study aims to identify the mineral elements and heavy metal contents of white mulberries (*Morus alba* L.) and black mulberries (*Morus nigra* L.) that are grown in the city center of Gümüşhane province and its neighboring counties. Heavy metal analyzes were performed by using ICP-MS, in the fruits, leaves and soil of the plants after being digested in a closed microwave digestion system by using suitable solvent mixtures. Sample collection was performed twice a year, namely during the ripening period and fully ripening period of the fruits. The results obtained were compared with the acceptable limits of heavy metal for humans as established by the World Health Organization, Turkish Food Codex and the literature and an opinion was submitted as to whether they present any risk in terms of human health.

When the available data is evaluated, the mulberries grown in the city center of Gumushane province and its neighboring counties, were found to have presented a health risk in terms of Pb, Cd, Ni, Cu, Zn, Mn and Co metals.

Keywords: Gumushane, Mulberry, *Morus alba* L., *Morus nigra* L., Heavy metal, Mineral element

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PP-70 ACCUMULATION OF HEAVY METALS IN ACACIA (*Robinia pseudoacacia* L.) DEPENDING ON AIR POLLUTION IN GUMUSHANE

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Heavy metals, naturally occurring compounds in the earth's crust, are non-biodegradable and have high potential to accumulate in living tissues by causing several disorders and diseases even at trace levels of exposure. Some of them are essential for human body at trace levels but above certain threshold concentrations they are considered as potentially toxic substances to human metabolism.

Gumushane hosts rich mineral deposits, one of the main causes of heavy metal pollution, and there are extensive mining operations conducted in the province. Owing to the fact that it is surrounded by mountains and thus has limited air circulation, it suffers from intense air pollution. For this reason, it is important to determine the size and distribution of heavy metal pollution in Gumushane in terms of protection of environment and human health.

This study was carried out to investigate the usage of acacia (*Robinia pseudoacacia* L.) leaves in monitoring of heavy metal pollution in Gumushane province. For this purpose the acacia samples were collected from 32 different localities from the mining area, industrial zone and highway area where the heavy metal pollution may be at high levels. The obtained mean Pb, Cd, Cu, Zn, Cr, Ni, Mn, Fe, Co, Al and As levels in the acacia samples taken from the mining area were 1.9, 0.1, 5.4, 26.1, 0.4, 0.7, 104.1, 274.0, 0.1, 296.8, and 0.2 $\mu\text{g g}^{-1}$, respectively; taken from the highway area were 8.2, 0.1, 6.3, 21.4, 0.6, 0.8, 76.0, 357.6, 0.1, 495.4, and 0.9 $\mu\text{g g}^{-1}$, respectively; and taken from the industrial zone were 1.3, 0.01, 4.9, 10.9, 0.6, 0.7, 74.1, 285.4, 0.1, 342.2, 0.3 $\mu\text{g g}^{-1}$, respectively. Hg ions were not detected in any of the analyzed samples. It has been determined that the mean Al levels of acacia samples taken from the mining area, highway area and industrial zone is higher than the tolerable upper limit.

Keywords: Gumushane, Heavy metal, Acacia, *Robinia pseudoacacia* L.

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PP-71 ASSESSMENT OF EQUILIBRIUM AND KINETICS PARAMETERS OF METHYLENE BLUE ADSORPTION ONTO NATURAL AND ACID MODIFIED BEECH SAWDUST

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Methylene Blue (MB), a type of cationic dye, is utilized in dyeing cotton, wool, and silk and it has some harmful effects to living organisms such that the excess intake of MB can cause increased heart rate, shock, Heinz body formation, cyanosis, jaundice, quadriplegia, methemoglobinemia, convulsions, and tissue necrosis in humans, and also if ingested, it damages to the gastrointestinal tract, nausea, vomiting, and diarrhea. Hence, it is important to develop an efficient method for the removal of MB from industrial wastewaters [1].

The natural (NBS) and H₂SO₄ modified beech (*Fagus orientalis* L.) sawdust (AMBS) was used as a low cost and effective adsorbent in removal of MB from aqueous solution by batch adsorption technique. The effects of initial solution pH, contact time, initial MB and adsorbents concentration, and ionic strength were studied upon the adsorption process. The process was found to be independent of initial solution pH and the adequate equilibrium time for the adsorption of MB onto both adsorbents was 240 min. As the NBS and AMBS concentration was increased from 1.0 to 20.0 g L⁻¹, the percentage amount of adsorption increased from 17 to 97% and from 18 to 99%, respectively. The presence of both NaCl and BaCl₂ salts in the solution reduces the MB adsorption amount by preventing the adsorption of MB to the active adsorption sites on the adsorbents. The experimental data were analyzed by the Langmuir, Freundlich, Temkin and Dubinin Radushkevich (D-R) isotherm models and showed a good fit with the Langmuir isotherm models. The monolayer adsorption capacities of NBS and AMBS were found to be 40.0 and 38.8 mg g⁻¹, respectively by using Langmuir isotherm model. The kinetics of the adsorption was tested using pseudo-first order, pseudo-second order, and intraparticle diffusion models. The results showed that the adsorption of MB onto both adsorbents proceeds according to the pseudo-second order model.

Keywords: Adsorption, Removal, Dye, Methylene Blue, *Fagus orientalis* L.

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PP-72 REMOVAL OF INDIGO CARMINE FROM AQUEOUS SOLUTIONS USING NATURAL AND H₂SO₄ MODIFIED PLANE (*Platanus orientalis* L.) SAWDUST

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Dyes and their breakdown products, released into the environment as result of various industrial activities, cause many health disorders to human beings such as dysfunction of the kidney, reproductive system, liver, brain and central nervous system. On the other hand in streams, they induce toxic effects to fish and other organisms by chelating with metal ions and reduce light penetration and photosynthetic activity by interfering with transmission of sunlight into waters. Therefore the removal of dyes from water and wastewaters becomes an environmentally important application. Adsorption technique, which has low operating cost and short operation time, is a commonly applied, practical and effective treatment method [1].

In the present research, natural and H₂SO₄ modified plane (*Platanus orientalis* L.) sawdust was utilized for the first time as an effective and readily available adsorbents in removal of indigo carmine (IC) from aqueous solutions through a batch adsorption technique. The effects of initial solution pH, contact time, initial IC and adsorbent concentrations, and ionic strengths were evaluated on the removal efficiency of IC, after being characterized of adsorbents by different techniques including Boehm titration, moisture content, pH_{pzc} and FTIR techniques. The maximum IC adsorption of natural and modified plane sawdust was obtained as 58.82 and 55.55 mg g⁻¹, respectively at initial pH 2.0 with an equilibrium time of 240 min, adsorbent dosage of 5.0 g L⁻¹ and initial IC concentration range of 50-1000 mg L⁻¹. The adsorption behaviors of IC onto adsorbents were investigated in terms of kinetics and isotherm evaluation. Langmuir isotherm model was found to be suitable to describe the adsorption equilibrium while the adsorption kinetics followed by the pseudo-second order model.

In the view of the obtained results, it can be concluded that the natural and H₂SO₄ modified plane sawdust can be utilized as a low cost and effective adsorbent in removal of indigo carmine from aqueous solutions.

Keywords: Adsorption, Removal, Dye, Indigo carmine, *Platanus orientalis* L.

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**PP-73 LIFESTORY OF A SLICE OF BREAD FROM CRADLE TO GRAVE: COMPETENCE OF
EARLY CHILDHOOD TEACHER CANDIDATES**

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Considering various pillars of sustainable development dealing with economy, society, and environment, it has been depicted that we, as human beings should build a sustainable food system urgently. Such a system is required to deliver food and nutrition security for all generations without detriment to environmental quality. Current patterns in terms of production, distribution, consumption, and dietary have led to adverse consequences on human health, national/global economy, usage of natural resources, and biological systems. For instance, food wastage impacts economy with a cost of billions of dollars in both developed and developing countries annually. Furthermore, global food production comprises majority of the fresh water consumption, leads to land-use change, and is responsible for relatively large amounts of greenhouse gas emission. Sustainable development goals pointing out creation of sustainable food systems have been underlined in international reports and it has been widely accepted that education could play significant roles in attainment of these goals. This study intended to focus on early childhood teacher candidates pursuing a course designed to enhance their awareness and competencies on sustainable diets. In order to grasp their competence on assessing the life story of a product frequently consumed, they were asked to explain the life story of a slice of bread from cradle to grave. It was observed that these teacher candidates could grasp the big picture in terms of agricultural processes and material processing considering sustainable use of natural resources. However, it was found out that they could not develop their awareness on waste reduction and how consumption patterns might be influenced by social and economic factors. In other words, they portrayed the lifestory as just manufacturing of raw materials but ignoring consumer related psychological and cognitive factors impacting the lifestory of a relative less complex product.

PP-74 PREVENTION AND CONTROL OF *CRONOBACTER SAKAZAKII* INFECTIONS IN INFANTS

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Cronobacter, previously referred as *Enterobacter sakazakii*, are gram-negative, motile, non-spore-forming peritrichous rods of the *Enterobacteriaceae* family. The germs can live in dry foods, such as powdered infant formula, powdered milk, herbal teas, and starches. Due to their immature immune systems and permeable gastrointestinal tracts, infants can be more susceptible to infection via foodborne pathogenic bacteria than other age-groups. *Cronobacter* infection represents a serious health risk in infants; particularly neonates, and death may occur in 40%–80% of cases. CDC is usually informed of about 4-6 cases a year. Infections in infants usually occur in the first days or weeks of life. Symptoms of *Cronobacter* infection in infants are usually a fever, underfeeding, crying, or very low energy. *Cronobacter* germs can cause sepsis or meningitis.

Human milk is recognised as the best form of nutrition for infants. However, in instances where breast-feeding is not possible, unsuitable or inadequate, infant milk formulae are used as breast milk substitutes. These formula are available in either powdered or liquid forms. Powdered infant formula is widely used for convenience and economic reasons. However, current manufacturing processes are not capable of producing a sterile powdered infant formula. Furthermore, after opening the package the powdered infant formula may be contaminated.

As a suggestion, firstly, *Cronobacter* infection has been reported almost never with exclusively breastfeeding babies, breastfeeding should be encouraged. Secondly, if it is necessary to be fed with baby's formula, liquid form can be chosen especially for newborn babies. Liquid formulas are sterilized and do not carry *Cronobacter*. Finally, if infants will be fed with powder infant formulas, it is suggested that good hygiene must be provided, the formulas should be mixed with water at adequate temperature (>70°C) and stored safely (in refrigerator for 24 hours). Thus, the development of *Cronobacter* and other microorganisms can be prevented.

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INTERNATIONAL CONGRESS OF HEALTH AND ENVIRONMENT

October 23-25, 2017

Adana-TURKEY

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PP-75 HEALTHY INDIVIDUAL, BUT WHY?

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Aim: It was planned to assess the importance of being a healthy individual, the basics of healthy eating and a healthy conditions can be created and what needs to be done to maintain these conditions.

Matherials and methods: By searching the literature, for being healthy, the importance of eating healthy nutrition and the preference of unhealthy nutrition chosen were screened and the diseases that were formed were evaluated together with environmental factors.

Results: Obesity refers to the accumulation of abnormal or excessive fat in the body to the extent that it can impair health. One of the most common chronic diseases of childhood is obesity. It is 25-30% in children and adolescents. In a third of the obese adults, obesity begins in childhood. It is evident that the development of obesity is a complex process that occurs on very unhealthy bases, very early ages and very active, and as much as understanding. For this reason, evaluating obesity in terms of both development and resolution is not enough and food safety, ecosystem, and urbanization need to be addressed in this context.

Conclusions: Obesity is the problem of economic public health on a global scale. Obesity is a complex, dynamic and multidimensional biopsychosocial phenomenon that develops as a result of the interaction of the social environment and physiology. When dealing with obesity, the important influence of the environment must be assessed in an integrated manner, and this consciousness collection should also be placed.

PP-76 FUNCTIONAL PROPERTIES AND NUTRITIONAL QUALITY OF WHEY PROTEINS

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Whey proteins are one of the main groups of the milk proteins obtained mainly from the cheese manufacture and used for various applications in food industry due to high nutritional value and valuable functional properties. β -lactoglobulin and α -lactalbumin are globular proteins and formed the great part of proteins present in the whey. Considering whey proteins in food industry can reduce environmental pollution and lead to process functional foods with high nutritional value. In addition to using as the common protein source for supplementation in food industry, whey proteins are used in sports and medical formulations. They are used for manufacturing of new products for physically active people and sportsmen based on their nutritional and functional properties. In this context, protein digestibility, amino acid composition, bioavailability of essential amino acids and physiological utilization of specific amino acids after digestion and absorption are the parameters that influence the nutritional quality of whey protein supplements. Whey proteins can be recovered from the milk in various forms consisting of whey protein concentrate, whey protein isolate and whey protein hydrolysate for different commercial proposes using the methods such as thermal evaporation or filtration. Whey protein concentrate is mainly used in food industry or as a health or sport supplement, while whey protein hydrolysate used for pediatric formulas. In this review, various functions of different forms of whey proteins in food industry and health section will be considered.

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PP-77 POSSIBLE EFFECTS ON HUMAN HEALTH OF CYANOTOXINS IN SEAFOOD

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Objective: In this review, aimed to draw attention to the cyanotoxins, which have been highly-studied around the world, but it has low-level subjected to the research in our country. The fact that these aquatic toxins, which are widespread throughout the world with the reason of global climate change, should be followed and the early adoption of measures to be taken is extremely important in terms of environment and human health for our country.

Introduction: Toxic cyanobacteria populations have been reported in freshwater, lagoons, coastal and marine environments in at least 45 countries worldwide. Cyanobacteria, which have a lot of species-bearing groups of photosynthetic gram-negative prokaryotes (*anabaena*, *aphanizomenon*, *lyngbia*, *microcystis*, *oscillatoria*, *nostoc* etc.) produce secondary metabolites known as toxins (anatoksin a, microcystin LR, MR, RR, hepatotoxin cylindrospermopsin etc.) for mammals. These metabolites can be classified in five different groups as hepatotoxins, neurotoxins, cytotoxins, dermatotoxins, and irritant toxins (lipopolysaccharides). The cyanotoxins, which release to the water by the way destruction of cyanobacteria cells, effects to zooplankton include daphnia species, rotifers, small cladocerans, mussels etc. The responsivity of the fish to the toxins is highly variable and related to the feeding habits directly. The carp are collected more toxins than mullet and other small carp species.

Conclusion: Fish deaths have been reported in the world due to the increase in cyanobacteria in the inland waters. Fish are exposed to these toxins with water they take with both the food they eat and the gills. Cyanotoxins, that affect the development of fish, osmoregulation, and behavior, negatively affect the liver, kidney, heart, gills, spleen and digestive tract. The effect of cyanotoxins is changed to the sensitivity of animal species, exposure amount, sex, age, and dependent amount other feed in the stomach of the exposed animal. The presence of microcystins in the water causes death in domestic and wild animals and is associated with human diseases. People are exposed to toxins by the way drinking contaminated water, consuming dish foods, or recreational activities like as swimming. For example, there is evidence of microcystin accumulation in fish and freshwater mussels consumed by humans. Due to contamination of irrigation water, the eatable herbs cause to expose. Because of the contamination of water of a hemodialysis unit, 50 patients have died in Brasil in 1996. In some areas of China, the increase in the rate of liver cancer primarily depends on the contamination of the water with the microcystin. Although there are very few epidemiological studies on the effect of poison in humans, Yu (1995) determined a relationship between surface waters and primary liver cancer. Due to the increase in mortality cases observed in humans and animals due to microcystin, the recommended limit by the World Health Organization for drinking water is 1 µg/l for microcystin-LR. However, for our country, it is of great importance to follow the annual cycle of cyanobacteria in order to investigate the acute and chronic effects of consumption of contaminated water with blue green algae toxins to the human health, and to manage it.

PP-78 FATTY ACID COMPONENTS OF SEAFOOD CAUGHT ALONG THE BLACK SEA

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Introduction: Black Sea consists of indigenous and introduced species and is between Eastern Europe and Western Asia and not only bounded by Turkey but also Bulgaria, Georgia, Romania, and Russia and. Fish has got great economic values not only for Turkey but also for all other countries around the sea. Even though Black sea has considerably fewer fish species and other possible consumable seafood items, these species constitute larger amount in total catch from Turkish coast and has very important place people's diet. That's why it is important to get a general perspective of seafood in this region.

Material and Methods: This study draws upon confirmed data about the fatty acid contents of fish from the Turkish Black Sea coast. The data have been collected by scholars and studied in different seafood species, gastropods, cephalopods, cartilaginous, and mostly bony fish, caught along the Black Sea of Turkey with 111 sampling data.

Results and Discussion: The mean levels of saturated fatty acids (SFA), monounsaturated fatty acids (MUFA), polyunsaturated fatty acids (PUFA) seafood from Black Sea in previously reported studies were found to be 30.97 %, 29.43%, and, 28.28%, respectively. The levels of docosahexaenoic acid (DHA, C22:6n3) and eicosapentaenoic acid (EPA, C20:5n3), two important omega-3 fatty acids in PUFA differed from each other and were found to be 14.11% and 48.30% at most in bony fish. The DHA and EPA, precursors of certain eicosanoids that are known to beneficial many health issues and reduce the risks of many disease including cancer, arthritis, Alzheimer, diabetes, inflammatory bowel, depression, anxiety. The lipids of seafood studied in this region are rich in omega-3 and should be consumed in order to get health benefits.

Keywords: Black Sea, Fatty Acid, DHA, EPA, OMEGA-3

**PP-79 DETECTION OF BIOFILM FORMATION AND BIOFILM-ASSOCIATED GENES IN
SALMONELLA SPP. FROM MEAT SAMPLES**

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Salmonella spp. is known as one of the most important foodborne pathogens. *Salmonella* has a number of virulence factors which are substantial for *Salmonella* pathogenesis. *Salmonella* produces biofilms that contribute to virulence of *Salmonella*. Biofilms are sessile microbial communities and play a role in host colonization and for the survival outside a host. Bacteria growing in a biofilm are resistant to antimicrobials, disinfectants, environmental stresses, and human immune system. Biofilms can be formed on abiotic surfaces, food surfaces, epithelial cells of animals and humans, and medical devices. Fimbriae and cellulose are components of the matrix produced by biofilm-forming *Salmonella*. Aggregative fimbria gene D (*agfD*) is important in biofilm formation. Diguanylate cyclase gene (*adrA*) is part of the regulatory network in cellulose production. The synthesis of fimbriae and cellulose is co-regulated by a LuxR-type regulator, the *agfD*, and *adrA* genes, respectively. The *sdiA* gene in *Salmonella* spp. encodes a signal receptor of the LuxR family. In this study, the production of biofilm by *Salmonella* spp. from chicken meat and ground beef was investigated using the microtiter plate assay and PCR test involved biofilm-associated genes *agfD*, *adrA* and *sdiA*. The production of biofilm by both phenotypic and genotypic methods was detected in 16 (72.7%) of the *Salmonella* isolates. Biofilm producing bacteria such as *Salmonella* may pose a potential threat to food safety and human health.

Keywords: *Salmonella* spp., chicken meat, ground beef, *agfD*, *adrA*, *sdiA*.

**PP-80 FLAGELLIN GENE AS A VIRULENCE FACTOR OF AEROMONAS SPP. FROM FISH AND
GROUND BEEF**

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Aeromonas species are mainly found in aquatic environment, fish, foods, and animals. *Aeromonas* spp. have been known to cause various diseases such as gastroenteritis, septicemia, necrotizing fasciitis, and myonecrosis in humans. The production of virulence factors associated with these illnesses are important in the pathogenesis of the *Aeromonas*. Flagella are considered a virulence determinant for *Aeromonas*. Most motile *Aeromonas* spp. produce mainly a single polar flagellum in liquid environments, while peritrichous or lateral flagella may be formed on solid medium surfaces by some species. The polar flagella of *Aeromonas* play an essential role in adherence to the gastrointestinal epithelium. Each polar flagellum consists of two flagellin subunits encoded by the *flaA* and *flaB* genes. The objective of this study was to determine the presence of flagellin gene (*fla*) for virulence in motile *Aeromonas* species including *A. hydrophila*, *A. caviae* and *A. veronii* biovar *sobria*. A total of 49 *Aeromonas* isolates including 9 *A. hydrophila*, 31 *A. caviae* and 9 *A. veronii* bv *sobria* was tested. The *fla* gene as a virulence factor was detected in 67.3% of all tested isolates. Of the *Aeromonas* isolates, 8 *A. hydrophila*, 19 *A. caviae* and 6 *A. veronii* bv *sobria* were found to be positive for the *fla* gene. Most of the *Aeromonas* species from fish and ground beef had the flagellin gene which are important in the adherence process and known as putative virulence factor. Thus these isolates from fish and ground beef samples may be regarded as a potential pathogenic.

Keywords: *Aeromonas* spp., flagellin gene, fish, ground beef.

PP-81 GENOTYPING OF *CRONOBACTER* SPP. AS AN EMERGING PATHOGEN IN READY-TO-EAT FOOD

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Cronobacter spp. belongs to the family of *Enterobacteriaceae* and is known worldwide as an emerging opportunistic food-borne pathogen. *Cronobacter* species have been frequently isolated from the environment, clinical specimens, plant materials, powdered infant formulas, cereals, cheeses, fruits, meats, vegetables and fermented beverages. *Cronobacter* causes serious infections such as meningitis, sepsis, and necrotizing enterocolitis with high death rates, primarily in infants and neonates. Molecular typing of pathogens is essential for tracing the source of infection and detection of virulent strains. At present, various methods including multilocus sequence typing (MLST), polymerase chain reaction–restriction fragment length polymorphism (PCR-RFLP), enterobacterial repetitive intergenic consensus sequence (ERIC)-PCR, randomly amplified polymorphic DNA (RAPD)-PCR, and pulse-field gel electrophoresis (PFGE) have been applied for typing of *Cronobacter* spp. ERIC-PCR has also been utilized as a useful method for the epidemiological investigation of *Cronobacter* from different sources. Therefore, the aim of this study was to determine the genetic relationship between the *Cronobacter* spp. from ready-to-eat food through ERIC-PCR method. The 31 *Cronobacter* isolates from ready-to-eat food and one *C. sakazakii* ATCC 29544 reference strain were tested for genotyping by ERIC-PCR. *Cronobacter* isolates were obtained from desserts, cheeses, doners, kavurmas, pastramis, meat free cig koftes, spices, and cereals. The results of our study showed the fingerprints of *Cronobacter* spp. consisted of 3 to 12 amplification bands. Among the *Cronobacter* isolates, the genetic similarity of twelve isolates was 100%. The present data indicated that the absence of a direct relationship between the ERIC-PCR fingerprint patterns in terms of their sampling origin.

Keywords: *Cronobacter* spp., ERIC-PCR, genotyping, ready-to-eat food.

**PP-82 ANTIMICROBIAL ACTIVITY OF THE SUMMER SAVORY (*Satureja hortensis* L.) PLANT
FOUND IN NORTHERN TURKEY**

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Objectives: This study focused on evaluation of antimicrobial activity of the summer savory (*Satureja hortensis* L.) plant extracts against a gram-negative bacteria (*Escherichia coli*) and a gram-positive bacteria (*Bacillus cereus*).

Methods: We carried out antimicrobial analysis of two different solvent fractions (methanol and ethyl acetate) obtained from summer savory plant leaves. Antimicrobial activity was determined by using disc diffusion method¹. Plant extracts were obtained by using soxhlet extraction method².

Results: Both methanol and ethyl acetate extracts demonstrated antibacterial activity against *E. coli* at 10 mg/mL concentration with a 9 mm diameter zone of inhibition for methanol extract and 7 mm diameter zone of inhibition for ethyl acetate extract, respectively. However against *B. cereus*, both extracts did not show inhibition effect at the same extract concentration.

Conclusions: Thus, the data suggests that summer savory extracts may have the potential to be used as anti-bacterial agent for gram-negative bacteria, and can be used in the treatment of diseases caused by *E. coli*. Also, it was found that, methanol is a superior solvent for extraction of antimicrobial substances from summer savory plant.

Keywords: Antimicrobial test, *Bacillus cereus*, Disc diffusion method, *Escherichia coli*, *Satureja hortensis* L., Summer savory

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**PP-83 SOME KINETIC PROPERTIES OF THE BORAGE (*Trachystemon orientalis* L.) PLANT FOUND
IN NORTHERN TURKEY**

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Objectives: The aim of this study is investigating the kinetic properties of polyphenol oxidase enzyme of borage plant. For this purpose, a crude enzyme extract that contains polyphenol oxidase was obtained and then enzyme activity was measured spectrophotometrically for several substrates. Substrate specificity of the enzyme was determined according to the comparison of kinetic constants.

Methods: Enzyme activity was measured using seven substrates at six different concentrations (for catechol and 4-methylcatechol: 1–10 mM, for caffeic acid: 0.1–2 mM, for pyrogallol: 1–20 mM and for guaiacol, gallic acid, l-tyrosine: 1 nM–100 mM) and under standard conditions in order to obtain Michaelis-Menten constant (K_m) and maximum reaction velocity (V_{max}). K_m and V_{max} values were calculated according to the method of Lineweaver and Burk¹.

Results: Borage polyphenol oxidase reacted with catechol, 4-methylcatechol, caffeic acid and pyrogallol. The enzyme didn't show activity towards l-tyrosine, guaiacol and gallic acid. The catalytic efficiency value (k_{cat} over K_m , $M^{-1} s^{-1}$) of the enzyme was also calculated for each substrate and found to be $9.8 \times 10^6 \pm 51$ for catechol, $24 \times 10^6 \pm 81$ for 4-methylcatechol, $122 \times 10^6 \pm 82$ for caffeic acid and $4.9 \times 10^6 \pm 72$ for pyrogallol, respectively.

Conclusions: In conclusion, we found that borage PPO enzyme showed diphenolase and triphenolase activity but didn't show monophenolase activity. Considering the ratio k_{cat}/K_m we can say that caffeic acid is the most suitable substrate for borage PPO, followed by 4-methylcatechol, catechol and pyrogallol.

Keywords: Catalytic efficiency, Borage, Enzyme kinetics, *Trachystemon orientalis* L., Substrate specificity

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PP-84 MICROORGANISMS ARE CAUSED DETERIORATION OF MILK PUDDINGS

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Milk and dairy products are very important place for adequate and balance nutrition. Composition of milk is affected of season, milking shape, nutrition condition of animal, lactation period, species, race etc. Generally, nutrient constituents of milk are protein, lipid, carbohydrate, minerals and vitamins. Milk and dairy products is a potential resource for appearance of various diseases as optimum ambience for growing microorganisms. Milk which is very important place to human nourishment can be harmful for human if it doesn't produced hygienic conditions, conserved, processed, done situation of necessary controls. Raw milk even includes a few bacteria, it's destroyed very quickly in consequence of microorganisms which are contaminant from the environment with different ways after milking and its potential resource for a lot of pathogens. Milk puddings like sütlaç, kazandibi, tavukgöğsü etc. which involve rise and starch are ideal products for microorganisms due to enable components of reproducing bacteria quickly, water activity and pH values. Like dairy products, microorganisms levels of desserts which are inclusive milk can increase incase required hygienic conditions and cold chain (production, storage, transportation etc.) This situation affects the microbiological and sensory quality of products. In this research, some microorganisms of causing deterioration in milk puddings are mentioned.

Keywords: Milk, milk puddings, microorganism, *Bacillus cereus*

PP-85 CUISINE CULTURE IN OSMANIYE

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Osmaniye is a city in the eastern part of Mediterranean Region and the center is the same city. Osmaniye is surrounded easterly, the district of Gaziantep, southerly, the district of Hatay, westerly, the district of Adana, with northerly, the district of Kahramanmaraş. Osmaniye became a city in 1996. Osmaniye borders on industrial cities like Adana and Gaziantep. This situation raises geopolitics importance of Osmaniye. Osmaniye has 30 minutes distances to sea coast like Burnaz, Yumurtalık and summer camping ground like Zorkun, Hasanbeyli, Feke. It also incorporates historical structures such as Toprakkale, Karatepe-Aslantaş Outdoor Museum and National Park, Kastabala Antique City, Ala Mosque etc. This circumstance is enhanced touristic value of Osmaniye. Moreover, Karatepe carpet is demonstrated the best representation of Anatolian carpet pattern of Turkish culture. Osmaniye province of the economy based on agriculture, wheat production quantities of grain compared with the region and Turkey in general, cotton from industrial plants is an important province in terms of peanuts from oilseeds. The foundation of the industry in Osmaniye province is peanuts. Osmaniye is the city where is manufactured to peanut % 40.4 of Turkey. Peanut is not only consumed as nut but also is produced peanut oil, peanut butter, chocolate covered peanut, peanut sweets etc. These products are provided in Osmaniye and nearby cities at the markets. Besides location and touristic structures, this city has unique cuisine culture. Locals usually used bulgur at their meals. Primary of bulgur dishes are içli köfte, fellah köftesi, sarmıç, çiçire, batırık etc. Besides these dishes, certain traditional meals such as saç kömbesi, çakıldaklı, toga, tırşık, kete etc. are identify this city. Locals entertain guests with traditional bairam kömbesi and kömbe with yogurt/milk. In this research, general information about city of Osmaniye are mentioned and the make-up of certain traditional products are stated.

Keywords: cuisine culture Osmaniye, traditional products

**PP-86 EVALUATION OF FOOD SECURITY AND HYGIENE CONDITIONS OF SCHOOL
CANTEENS IN A DISTRICT**

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Objective: This study aims to evaluate of food security and hygiene conditions of school canteens in Mersin city Mezitli district.

Methods: This cross-sectional study consist of the governmental and private primary, secondary and high school canteens in Mezitli, Mersin. All the school canteens in determined characteristics were interviewed without sampling. As one of 31 canteens refused participation, 30 canteens were taken into study. Data was collected between 26.10-20.11.2015. Data was gathered with questionnaire including general characteristics of school and canteen and evaluation form questioning the legislation criteria with food security and hygiene conditions of canteens. Descriptive statistics (number, percentage) were used in the summary of the data.

Results: 13 (43.3%) of the 30 canteens taken into study were in high school, and 25 (83.3%) were in governmental school. All the canteens had school canteen inspection commission and were inspected in a previous date. Precaution against pests were not taken in 18 (60.0%) of the canteens. Five (16.7%) of the canteens did not have drainage on the floor. Nine (30.0%) of the canteens had foods banned from sale. In 29 (96.7%) of the canteens, staff were not using personal protectives. In 8 (26.7%) canteens, staff did not have periodical health inspection. In 14 (77.8%) of 18 canteens selling meat products/raw vegetables-fruit was not used disposable equipment for food service. Nine of the canteens were selling fresh fruit and three were selling dried fruit. There were no canteens conforming the standards in terms of all conditions.

Discussion and Conclusion: Taking no precautions against pests, problems in floor cleaning and not using personal protection in canteens threat food security. Sale of unhealthy food should be prevented by qualified and regular supervisions of canteens. In addition, food products that will improve healthy eating habits in students should be presented in canteens.

PP-87 CRITICAL MOLECULES: “ANTIOXIDANTS”

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Substances which protect organism from the toxic effects of reactive oxygen species are defined as antioxidants. Therefore, all of the substances opposite to free radicals are antioxidants despite the fact that some of antioxidants function as free radical collectors. Another definition of antioxidants, which makes oxidants inactive substances refers to it as.

Small molecules and enzyme systems that provide defense against oxygen derivatives that enables them to remain stationary concentration of free radicals.

This defense mechanism is an extremely critical in maintaining the viability of aerobic cells. Antioxidants are classified according to their function and areas in different ways by different researchers. While, Ito and Hirose (1989), classified them as antioxidants used as food additives and natural antioxidants, Maxwell evaluated them in two groups as natural antioxidants and farmaceutic antioxidants.

Antioxidants neutralize oxidants with four different mechanisms:

- 1- Scavenger effect: Oxidants are converted to a weak molecule by enzymes.
- 2- Suppressor effect: Antioxidant neutralizes oxidants by transferring one hydrogen. This effect is made by vitamins and flavonoids.
- 3- Repair effect: they repair oxidative damaged biomolecules.
- 4- Chain breaking effect: an impact-type that interfere with oxidant functions by linking oxidants such as heavy metals. This effect is performed by hemoglobin, ceruloplasmin and E vitamins.

Recent studies shows that antioxidants have a positive effect on cancer, respiratory tract diseases, cardiovascular diseases and many similar cases.

Many studies carried on in Ondokuz Mayıs University, Department of Biology showed that antioxidants have a protective effect against active substances that make radical damage on the cell. However, when used in the absence of cell damage it was also observed that they make various defects in cell compared to control group. It should be considered that antioxidants which has protective and restorative effect when used in the presence of tissue or cell damage may have harmful effects when used randomly and it is recommended to not use arbitrarily.

Keywords: Antioxidants, reactive oxygen species.

PP-88 HEALTH RISKS RELATED TO COOKING FUMES EXPOSURE AMONG KITCHEN WORKERS

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"Cooking fume" is used to express the visible smoke that occurs during cooking, and include the term "cooking oil fumes". Cooking oil fumes are the main source of particulate matter and other possible pollutants in the kitchen air. Cooking oil fumes are considered as major indoor pollutants. Indoor kitchen air contain particulate matter in different aerodynamic diameters. The average particle concentration by cooking increases by 20-40 times in the kitchen and by 10 times in other areas around the kitchen. In addition to these pollutants, cooking oil fumes contribute significantly to the content of polycyclic aromatic hydrocarbons (PAH) in the interior kitchen air.

The composition of cooking fumes varies widely depending on such factors as the composition of the raw food, cooking oils, cooking temperature, and cooking methods. Food preparation practices at high temperatures, such as frying and grilling, lead to the formation of oil aerosols with aerodynamic diameters between 20 and 500 nm. It is stated that cooking oil fumes contain carcinogenic chemicals such as acids, alcohols, aldehydes, PAHs, acrolein, benzo(a)pyrene, t,t,-2,4-decadienal.

In recent years, the interest in the size and composition of indoor aerosols replaced with particle characteristics, and the relationship between occupational, and environmental health risks of these particles. Hotel, and restaurant employees have an increased mortality rate from respiratory diseases such as asthma, emphysema, lung function abnormalities and lung cancer. The vast majority of kitchen workers spend at least 60% of their time at work. This perspective emerges when the magnitude of the problem. A better understanding of the relationship between kitchen air quality and the health of kitchen workers is needed.

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PP-89 EVALUATION OF EXTREME METEOROLOGICAL EVENTS CONSIDERING FOOD
SECURITY

BLACK SEA CASE: 27-28 JULY 2017

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Agricultural production plays vital role on human feeding. Soil conditions, water availability and climatic conditions affects amount of production. However, when soil condition and water is stable, extreme air conditions limits amount and quality of total production. In Black sea region, high temperature and low relative humidity events experienced on 27-28 July 2017 resulted dramatic outputs considering hazelnut yield and quality in the region. For this purposes, long-term extreme temperatures and relative humidity records were analyzed using probability distribution procedures to figure out the dimension of the events. Using appropriate probability distribution, recurrence interval of the event experienced on the date and synthetic values of corresponding to standard recurrence intervals were determined. Geographical Information System (GIS) were also used to convert point-wise event values to scattered out over the region using Inverse Distance Weighting method. Hazelnut production is very common in the region, Turkey leading country among the hazelnut producer countries. Since hazelnut plant has the fibrous root system and effective soil depth is very limited especially eastern Black sea region, drought periods immediately effects plant water system and suffering from drought. Especially, in the south facing sloping orchards, this effects is shown very effectively. Findings of probability distribution and generated synthetic data were interpreted considering total antioxidative capacity and total phenolic components. Also adverse effects of drought and designed temperature on pomological traits of hazelnut was discussed.

Keywords: Extreme meteorological events, probability distribution, mapping, hazelnuts, total phenolic

**PP-90 INVESTIGATION OF THE ANTIBACTERIAL EFFECT OF THE PLANT *SIDERITIS*
PHLOMOIDES BOISS. & BAL. AN ENDEMIC SPECIES IN TURKEY**

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There are many species of *Sideritis* belonging to *Lamiaceae* family known as endemic species in Turkey. *Sideritis* species have a very rich chemical structure in terms of diterpenes, glycosides, flavonoids, phenylethanoids, and essential oils. Extracts of *Sideritis* species obtained by different extraction methods are used in many areas. Especially from the medical side, this plant is known to have positive effects on the cold, cough and digestive system it is consumed as "Mountain tea" in the place where the plant grows. In our study, *Sideritis phlomoides* Boiss. & Bal. plant is provided. The plant sample was dried and the ethanol and water extracts were prepared. Antibacterial analysis was carried out by disk diffusion method and the test microorganisms were *S. aureus* ATCC: 29213, *S. pneumoniae* ATCC: 49619, *P. aeruginosa* 27853, *E. coli* 35218, *E. coli* 25922, *E. coli* BC 1402, *P. putida* BC 1617, *Klebsiella pneumoniae* BL 2003, *B. cereus* ATCC: 33019 and *Salmonella* Enteritidis ATCC 13076 were used. Extracts were dissolved in dimethyl sulfoxide (DMSO), and left in 20 µL disks. DMSO was used as a negative control, ampicillin / sulbactam and simple antibiotic discs were used as positive controls. As a result antibacterial effects were observed for all extracts of plant *Sideritis phlomoides* Boiss. & Bal.. However, the antibacterial effect of ethanolic extract dissolved in DMSO was detected most abundantly on *Salmonella* Enteritidis ATCC 13076.

**PP-91 EFFECTS OF MONOSODIUM GLUTAMATE LONG TERM TREATMENT ON BEHAVIOUR
AND PAIN THRESHOLD IN RATS**

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Monosodium glutamate (MSG) is used as a flavor enhancer in many processed foods. In many countries there are no limitations on the amount of MSG intake which is questioned due to its toxic effects on human health. Previous studies have shown that MSG administration during the early postnatal period results in neurodegenerative changes in several forebrain regions, characterized by neuronal loss and neuroendocrine abnormalities. No consensus has been reached between food committees and researchers on the harmful effects of MSG. Experimental animal studies of MSG are carried out at high doses and on the developing brain.

The present study was designed to investigate the in vivo effects of monosodium glutamate (MSG) on the behavior and pain threshold in rats. In this study, 8-week-old male rats (n=10) were given MSG (with gastric gavage) only one day in a week for 12 weeks. The control group rats (n=10) were given saline at same time and period. After the exposure period, the animals were subjected to behavioral tests in open field area and pain threshold in hot plate. There was no significant difference between MSG and control groups in locomotor activity and exploration behaviour in open field. There was a significant difference pain threshold of MSG and control groups rats in the hot plate. The pain threshold of MSG-treated rats decreased significantly ($p < 0.05$). This finding indicates that MSG increases response to painful stimuli. We suggest that MSG is effective in the pathways of nervous system responsible for pain perception. Further research is needed on these relationship between MSG and pain perception.

This study is supported by Erciyes University Scientific Research Center (BAP) (TYL-2016-6478).

PP-92 THE IMPORTANCE OF ANTIOXIDANTS AND PLACE IN TODAY'S SCIENTIFIC STUDIES

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The role of antioxidants in the formation of rancid taste and flavor due to oxidation is great. These substances retard or prevent the formation of oxidation by adding food. Synthetic antioxidants are mainly used in industrial processes to prolong the shelf life of foods. However, many investigators note that some synthetic antioxidants such as butyl hydroxytoluene (BHT), butylhydroxyanisole (BHA), tertiary butyl hydroxyquinone (TBHQ) and propyl gallate (PG), which are used in the processing of long-term nutrients, show a carcinogenic and teratogenic effect in the living organism. Consumers generally prefer natural antioxidants to synthetic ones.

Whether it is natural or synthetic, today, there are many different studies on antioxidants in different fields. We can give examples of studies done to enrich the foods and to solve the negativities, done to determine the antioxidant activities of natural foods and their components, on the addition of antioxidants to edible and active packaging, In vivo studies on antioxidant enzymes in plants and animals and encapsulation.

By reviewing current literature on different antioxidant studies like this and this, relation of topics to each other and the results obtained are investigated in detail. Thus, the importance of antioxidants in scientific, sectoral and health fields has been discussed with different studies.

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PP-93 ANALYSING ENVIRONMENTAL NOISE LEVELS IN URBAN PARKS

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Urban green spaces are viewed as the last remnants of nature, and rapid urbanization and increased leisure time increase people's awareness of urban green space. On the other hand, urban green spaces and their environmental and social benefits are becoming inadequate due to urban environmental problems. Cities and towns experience increasing signs of environmental stress, particularly in the form of poor air quality and excessive noise. Among them, environmental noise level is one of the key determinants of life quality in urban areas of modern cities. The aim of the research is to analyse the levels of noise pollution in urban parks in the city of Gaziantep. The study consisted of three phases: i) Measuring and mapping noise levels to quantify spatial distribution of noise pollution, ii) Comparing measurement results with international noise limits (55 dBA), and iii) Developing environmental protection and planning policies to increase the benefits of urban parks and the visitors' wellbeing. Three urban parks situated different parts of the city have been considered: Çamlık Parkı, Masal Park, and 100. Yıl Parkı. A homogenous distribution was considered while locating the measurement points in the park areas. Our findings indicated that environmental noise is one of the most important factor that should be considered in the planning of urban green areas and promoting public well-being.

**PP-94 EFFECTS OF ENGINEERED-NANOPARTICLES ON PERMEABILITY AND
CYTOTOXICITY OF BRONCHIAL EPITHELIAL CELL CULTURES FROM SUBJECTS WITH AND
WITHOUT CHRONIC OBSTRUCTIVE PULMONARY DISEASE**

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Background: The risk of exposure to nanoparticles (particles $\leq 100\text{nm}$, NP) at daily life is getting increased due to the extensive use of nanotechnology. Our previous studies demonstrated that NPs led to toxicological and inflammatory effects in airway epithelial cells. The aims of the present study were to investigate effects of multi wall carbon nanotubes (MWCNT) on trans-epithelial electrical resistance (TEER) and release of lactate dehydrogenase (LDH) from human bronchial epithelial cell cultures (HBEC) from patients with and without Chronic Obstructive Pulmonary Disease (COPD). **Methods:** We cultured HBEC from lung explants of smokers with and without COPD on semi-permeable cell culture inserts, and incubated these with 0, 10, 50 ve 100 $\mu\text{g/ml}$ MWCNT. We measured TEER of cultures at the beginning (T0), T1, T2, T4, T6, and T24 hours. LDH was analysed at t24 hours.

Results: In smokers, 10 $\mu\text{g/ml}$ MWCNT led to an increase in TEER at T1 (median=810.5 ohm [Ω], $p < 0.05$), T2 (median=779.0 Ω , $p < 0.05$), T6 (median=708.0 Ω , $p < 0.05$), and T24 (median=872.0 Ω , $p < 0.05$) hours, as compared to t0 (median=721.0 Ω). Similarly, 50 $\mu\text{g/ml}$ significantly increased TEER of smoker cultures at t1 (median=488.0 Ω , $p < 0.05$) and t24 (median=501.0 Ω , $p < 0.05$). In smokers, 100 $\mu\text{g/ml}$ MWCNT (medians: 5.1 vs 3.43 nmole, $p < 0.05$) led to an increase in release of LDH. Similarly, 100 $\mu\text{g/ml}$ MWCNT (medians: 6.44 vs 3.54 nmole, $p < 0.05$) significantly enhanced LDH release in non-smoker cultures. **Conclusion:** Our findings have demonstrated that MWCNT can affect permeability and cytotoxicity of primary bronchial epithelial cell cultures.

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PP-95 EXAMINATION OF INTERACTIONS RELATED TO INDOOR AIR POLLUTANTS

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Determination of the types and concentration levels of pollutants which generate indoor air pollution can be difficult due to many factors affecting its properties. One of the important factors, which can cause shifts and changes, is pollutant related interactions. Due to the mixture of different pollutant types forming the pollution, pollutants with various properties can interact with each other or with substances of indoor surfaces physically or chemically. As the result of these interactions, the quality and quantity of indoor air pollution can change. New pollutants can be formed, whereas the concentration level of some pollutants can be decreased. Identification of different interaction types and other indoor conditions that accelerate these processes will facilitate more accurate determination activities. Also with this knowledge, building designers and users can take proper precautions against this phenomenon, especially during selection of building products.

**PP-96 PARTICLE MATTER POLLUTION MEASUREMENT MODELLING IN PVC PRODUCTION
FACTORY**

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Increasing industrial activities have been increased the aerosol particles substantially in the globally as aerosol particles from pre-industrial times to the present day. Cleaning process, repairing and painting exposed surfaces has become an economic effect. Air aerosols plays an important key factor in climate and atmospheric chemistry. Recent considerable attention has been affected to air quality degradation caused by PM. Studies have shown that fugitive dust is the major source of the total suspended particulates and aerosol particles less than 10 microm (PM₁₀). The ambient air level of PM is generally higher in developing areas because of higher road dust loading contributed from construction/industrial activities. PM₁₀ can easily be transported through the upper respiratory tract into the bronchioles and alveoli of the lung, causing direct health hazards. Most recent studies focus their attentions on finer particulates (PM_{2.5}) because of their ability to penetrate deep into the respiratory system. Particle matters have a long residence time in the atmosphere and can undergo dispersion and transport processes. As particulate matter is transported from a source to a potential receptor, the pollutant disperses into the surrounding air causing various effects to the floral/fauna inhabitants and the environment. In our study, particle level at ambient in door levels were measured and modelling of distribution in working area were investigated.

Keywords: PM, 2,5 micron, modelling, air pollution.

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PP-97 INDOOR AIR POLLUTION AND ITS EFFECTS ON HEALTH

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Environmental effects on human health proceed through the human history. In this day and age, environmental changes have reached the dimensions that will endanger human beings. Approximately one out of four deaths in the world is linked with living in an unhealthy environment. The aim of this review was to evaluate health effects of indoor environment.

There are three main environmental factors that affect our health; the soil we live on, the water we drink and the air we breathe. Deaths due to air pollution are accounted as %6 of deaths in one year. Most air pollutants are found in indoor environments rather than outdoor. Approximately 2.5 million people in developing countries suffer from domestic air pollution. In the year of 2016, an estimated 54.5 per cent of the world's population lived in urban settlements. These people who live in urban areas spend more than 90 percent of their lives indoor environment. As an expected consequence of this life style, number of the health problems inflicted from air pollution increases distinguishably. Most of the victims are women and girls due to dealing with cooking and heating in the house.

Indoor air pollution may result from toxic/ irritant chemicals, allergens, infectious agents caused by house dust, tobacco smoke, cleaning products or emissions from cooking and heating. Exposure to indoor air pollution increases the risk of asthma and sensitization to aeroallergens. Also, it may cause dermatitis, respiratory infections and cancer.

Air conditioning is the most effective way to avoid from air pollution. By using host system machines, the indoor air can be purified. Plastic barriers near the roads prevent the exhaust air to reach buildings. Banning the smoking from indoors and prohibit the using of flueless space heaters are the ways of protection from damages of indoor air pollution.

**PP-98 WASTE CONCEPT IN THE HEALTH SECTOR AND MANAGEMENT OF MEDICAL
WASTES**

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Hospitals are complex and socio-technical systems that produce health services. Different kinds and amounts of waste are produced during the health services production. Medical wastes are defined in different forms in different countries. According to the World Health Organization, used needles and syringes, blood, chemistry, pharmaceutical products and radioactive substances are defined as medical wastes. Turkish Medical Waste Regulation defines medical waste as infectious, pathological and sharp wastes.

The management of medical waste has great importance on the community and environmental health. The steps of medical waste management include waste separation, collection, transportation, temporary storage and ultimate disposal. Poor waste management leads to environmental pollution and affects human health negatively. From this point of view, typhoid fever, cholera and hepatitis are the most common diseases.

In this context, the concept of waste in the health sector, the management of medical wastes, the effects of medical wastes on the environment and human health will be explained.

Keywords: Health sector, public health, medical waste, management of medical waste.

**PP-99 INVESTIGATION OF INFORMATIVE SIGNBOARDS RELATED TO PHYSICAL ACTIVITY
FOR HEALTH IN THE CITY PARK OF MANISA**

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Objective: Environment is one of the important factors that determines the physical activity participation for health. City parks are indispensable in providing active life style opportunities for people living in the big cities. Thus, the purpose of this study was to examine the existence of informative signboards which are encouraging participation and enhancing the awareness of physical activity in the Atatürk City Park, the only city park in Manisa.

Method: The park was visited. Physical activity possibilities were recorded. Informative signboards (plates, billboards, etc.) about the physical activity and its basic components (type, intensity, duration, frequency and development) were examined.

Results: It was determined that there were 1 football field, 2 basketball courts, 1 tennis court, 1 bicycle path, 1 jogging path, children playgrounds and 2 fitness training equipments. It was also observed that a grass-field fitness event was held under the supervision of an expert three days a week. There were a total of 12 billboards, two of which were digital and a large number of information boards. Some of them were for advertisement, while others were for warnings about keeping the environment clean. However, none of them contained information about the definition or components of physical activity for health.

Discussion: In Atatürk City Park there were fields and encouraging events for the physical activity participation. However, there was no informative signboard or information about basic components of physical activity.

Conclusion: We think that in order to increase the participation in a conscious physical activity, cooperation between the municipality and the university should be carried out in order to get more benefits from the city park, which is the most important common use area where urban people can do various social and physical activities.

Keywords: Physical activity, environment, city park, health

PP-100 TOXIC WASTES CREATED BY FLOOD DISASTER AND THE EFFECTS ON HUMAN HEALTH

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Objective

Known risk factors for flood-related mortality and morbidity are: fast-flowing water, hidden hazards, water of unknown depth, driving and walking through flood-water, flood-water contamination (by chemicals, sewage and residual mud), exposure to electrical hazards during recovery and cleaning, unsafe drinking-water and food shortages and contamination, incomplete routine hygiene, CO poisoning, and lack of access to health services. The purpose of this study is to examine toxic chemical hazards in flood waters.

Method

In this study, caustics (lime and oil solvents, oven cleaners, sink openers (NaOH, KOH), toilet cleaners (H₂SO₄, HCl) and ammonia cleaning agents) were taken out of the chemical cleaning agents that could result from flood disasters. The possible effects of these wastes on human health have been evaluated. Work data were collected by document analysis method.

Result and Discussion

The caustic chemicals involved in the flood waters have various effects on the human health, depending on the type of substance, the route of entry into the body and its dose. Lime and oil solvent, oven cleaners and sink openers cause serious esophageal burns, stridor, vomiting, hyper salivation and abdominal pain with oral intake. In the case of inhalation, irritation, respiratory failure, pulmonary edema and pneumonia develop in the upper respiratory tract. In the case of inhalation, toilet cleaners can cause burning in the throat, cough, bronchospasm, dyspnea, pulmonary edema. In oral intake, they may cause burns, bleeds, and perforations in the gastrointestinal tract. In the eye, at higher concentrations, it may cause corneal burns and vision loss. Ammonia compounds are substances that are irritant to the eye and upper respiratory tract. During oral intake they cause burns on the lips, mouth, and esophagus.

Conclusion

Guidebook for the management of toxic chemical wastes resulting from flood disaster should be prepared. Speeding up public awareness about the effects of chemical substances in flood waters, swimming, walking, contact and flood waters on health.

**PP-101 EVALUATION OF EMERGENCY AND DISASTER PREPAREDNESS IN SMALL BUSINESS;
SAMPLE OF GUMUSHANE PROVINCE**

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Objective: The ability of small businesses to survive with disasters and reduce the impact of disasters is determined by disaster preparedness and their knowledge and awareness. The purpose of this study is to assess the preparations of small businesses for disasters and emergencies.

Methods : The research was carried out on the owners, managers and staff of the small business in Gümüşhane. The research group was composed of 270 small businesses that agreed to participate in the survey. Survey form was applied as data collection form in the survey. This form consists of two parts. The first part consists of questions prepared to obtain demographic information; the second part comes from the questions prepared to evaluate your emergency preparedness. Data were evaluated by chi-square and t-test.

Results and Discussion : 270 of the small business in Gümüşhane Province, which constitute the research group, agreed to participate in the survey. 86.3% of the participants rated the installation as less dangerous, 8.9% as dangerous and 4.8% as very dangerous. The average score of the participants was 2.46 ± 2.68 out of 10.

Conclusion : The average score of participants was very low. There is a statistically significant difference between the tasks of the participants in the operation and the knowledge score. It is seen that the information scores of the business owners are lower than the managers and staffs. It is observed that business with high preliminary knowledge points have more space in the operation of disaster plan requirements and practice.

The level of knowledge score increased as the level of preparation increased. There is a need to increase disaster information levels in order to increase the resistance of small businesses to disasters.

Keywords: Disaster, Disaster Preparedness, Disaster Plan, Small Business, Safety

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PP-102 EVALUATION OF PHYSICAL CONDITION OF WORKING ENVIRONMENT AND
OCCUPATIONAL ACCIDENT ON KITCHEN WORKERS

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Introduction: The physical conditions of working environment in the catering services are important to protect the health of employees, to create a safe working environment.

Method: The study was conducted with the aim of assessing the physical conditions of the workplace and identifying occupational accidents of catering staff who worked continuously in the last year. The sample of the study consisted of a total of 158 individuals working in kitchens at a university in Ankara. The detection of the hazards in the working environment was carried out using a checklist prepared by İŞGÜM (Institute of Occupational Health and Safety). By the control lists, the hazards were determined and the risk level of hazards was determined by applying the matrix method. Also, a calibrated thermohygrometer was used to measure the ambient temperature and humidity of the workplace.

Results: It is identified that 63,9% of participants had a work accident in the last 1 year. Burns (90.1%), cuts (92.1%), slipping accidents (93.1%) were frequent occurrences of work accidents. According to the checklist sections, kitchens were found to be particularly at risk for electricity, machinery and equipment, fire and emergency. In addition, it has been determined that the temperature values measured in the kitchens included in the study are above the reference values.

Conclusion: In this study, it was determined that the kitchens had a high risk in terms of machinery and equipment and that there was no effective ventilation system according to the observations and measurements made. In kitchens, high-risk areas should be identified and proper measures should be taken with the legislation, the physical conditions of working environment should be arranged according to ergonomic needs and an effective workflow should be ensured and the level of awareness should be increased by giving necessary trainings to kitchen staff.

PP-103 HOUSING CONDITIONS AND HEALTH RELATEDNESS IN CHILDHOOD

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The need for housing is among the basic needs of the individual. For this reason, it is important that the housing is suitable for the health. Inadequate housing conditions are effective on physical and mental health. It is known that 2.4 million people in the world are deprived of basic sanitation services and that housing conditions in many countries in Europe are not appropriate for health. Social determinants have an impact on housing health. Income inequalities seen among individuals lead to the impoverishment of individuals, and to living in cheap, inadequate housing.

In this compilation is aimed to evaluate the effects of housing conditions on health during childhood in which physical and mental development continues. It is stated that the probability of illness and disability in children living in bad housing conditions is increased by 25%. Diarrhea is still at a high level among the infectious diseases that cause child deaths in the world and respiratory diseases and infectious diseases are among the firstly of infectious diseases seen in childhood in our country. Accidents related to environmental and safety features, infectious diseases, are common in school children. Increased risk of being seen that bath and toilet in non-healthy homes infectious disease, respiratory diseases in crowded houses, accidents in homes with insufficient safety features. In addition, it is stated that living in unfavorable housing conditions during childhood prepares the ground for coronary heart diseases, cancer and many respiratory diseases in later periods.

Conclusion: Families living in inadequate housing conditions generally have a low level of health perception, the negative effects of housing conditions on child health reveal the importance of investigating the relationship between child health and housing conditions. In our country, there is a need for more research into this area.

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PP-104 THE IMPACTS OF CLIMATE CHANGE ON THE FISHERIES/AQUACULTURE

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Climate change is a change in the statistical distribution of weather over periods of time that range from decades to millions of years. According to the UN Framework Convention on climate change the average temperature of the earth's surface has risen by 0.74°C since the late 1800s and is expected to increase by another 1.8°C to 4°C by the year 2100. The reason for this climate change is believed to be due to the increase of heat-trapping greenhouse gases in the atmosphere, in particular CO₂, methane- nitrous oxide. This change may be qualified as anthropogenic climate change, more generally known as "global warming" or "anthropogenic global warming". Aquaculture is defined, the farming of aquatic organisms in both coastal and inland areas involving interventions in the rearing process to enhance production. Nowadays we are showed that negative effects of climate change to nature. This change has specifically both direct and indirect impacts on fish stocks which are exploited commercially. Direct effects act on physiology and behavior and alter growth, reproductive capacity, mortality and distribution. Indirect effects alter the productivity, structure and composition of the marine ecosystems on which fish depend for food. The most important product is fish of fisheries and aquaculture. Fish supply essential nutrition for 3 billion people and at least 50% of animal protein and minerals to 400 million people from the poorest countries. Aquaculture is the world's fastest growing food production system, growing at 7% annually. Fish products are among the most widely traded foods, with more than 37% of world production traded internationally.

This review has been carried out in order to understand in detail the interactions between climate change and fisheries/aquaculture.

PP-105 ENVIRONMENTAL EFFECTS of LIME PRODUCING PLANTS

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Lime is known since ancient times and is a substance that has versatility. Metallurgy, chemistry, construction, iron and steel industry in sectors such as the use of lime is available in large quantities. Limestone is a naturally occurring and abundant sedimentary rock consisting of high levels of calcium and/or magnesium carbonate, along with minerals. Lime production begins by extracting (blasting or crushing) limestone from quarries and mines.

During limestone production, vibration and dusting can occur. Lime is obtained by burning limestone in kilns. It has been used in many different types of vertical kiln in production of lime in Europe and in our country. Gas, liquid and solid fuels are used as fuels in the lime kilns. Depending on the type of fuel, also changes the composition of the given emission into the atmosphere.

In this study, possible effects of the lime production facilities were investigated.

Keywords: Limestone, Lime, Kiln, Flue gas emissions, Vibration, Dust

PP-106 ISOLATION OF LISTERIA MONOCYTOGENES FROM BLACK MUSSELS (*MYTILUS GALLOPROVINCIALIS* L. 1819) in TURKEY

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Listeria monocytogenes is one of the most important food-borne pathogens causing illness in humans and animals. Because of *Listeria monocytogenes*'s ability to grow and multiply at refrigerated temperatures, it gets an important matter in ready-to-eat foods. Listeriosis cases are often occurred by resulting from the foods contaminated with *Listeria monocytogenes*. Especially since mussels are undercooked or consumed raw, they pose a serious threat to *Listeria* infections. In this study, 3 isolates of *L. monocytogenes* from black mussels were described during a survey in the Aegean region. As the mussels feed by filtering the water, the more dirty the water is, the more dangerous the microorganism is in their structure.

PP-107 TREND ANALYSIS OF WATER QUALITY PARAMETERS AND COMPARE THEM WITH THE WATER LEVEL FLUCTUATIONS OF THE LAKE URMIA

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Water is one of the crucial elements of nature, and living organisms depends on it. Lake Urmia is the biggest lake in the Iran and one of the biggest salt lakes in the world. Therefore, changing the quality and quantity of this lake's water could have cultural, industrial and environmental damages. Considering the special circumstances of the Lake Urmia, environmental aspects are more important since the water of Lake Urmia is not suitable for agriculture due to the great salt concentration in this lake. For this reason, studying the trend changes of water quality variables is highly significant. The goal of this study was surveying Mann-Kendall trend analysis of six quality parameters at the Lake Urmia including Na^+ , K^+ , Mg^{2+} , Cl^- , HCO_3^- , and SO_4^{2-} then compared them with the fluctuations of lake's level. In this study, monthly samples were gathered from 5 different locations inside the lake's region during 10 years from 2005 to 2015. The results revealed that the ratio of Na^+ and Cl^- have decreased sharply by falling the lake's level. Decreasing the amount of water in the lake causes to sedimentation of salt and outcome of this sedimentation is tons of salt which could be easily carried by wind. Conversely, the ratio of K^+ , Mg^{2+} , HCO_3^- , and SO_4^{2-} have increased with diminishing water level. Increasing these parameters have a negative impact on quality of the water in the lake and could affect lives of humans, animals, and plants; subsequently, harm the ecosystem of that area. In conclusion, regarding the crisis of Lake Urmia and sharp decline of precipitation in recent years, and consequently the sharp decrease in the amount of water in the lake, it can be expected that the water quality of the lake has a subtractive process. Furthermore, sedimentation of the salt and spreading of it by wind could be the reason of the many health problems which become prevalent across this area recently.

Keywords: Water quality, Trend analysis, Urmia Lake, Iran.

PP-108 WATER POLLUTION AND POLLUTED WATER RELATED ILLNESSES

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80 – 140 liters of water is required daily for a person for domestic usage including drinking water. The source of water pollution may be either physical, chemical or biological. Drinking water should not contain any offensive odor, taste or turbidity. Chemical substances like arsenic, cadmium, chromium, lead, mercury, selenium, fluoride, cyanide, nitrate or ammonium must be eliminated from drinking water by using proper treatment methods. Chronic effects of chemicals in drinking water result in cancer, organ damage, circulatory system disorders, nervous system disorders and reproductive system disorders. Existence of high levels of nitrite or nitrate in drinking water lead to “blue baby syndrome”. Biological contaminants such as bacteria, viruses and protozoans in water cause water borne diseases. Cholera, typhoid and dysentery are most common waterborne diseases; vibrio cholera, salmonella and shigella bacteria are responsible from these illnesses respectively.

The aim of this study is to present water pollution and polluted water related illnesses.

Keywords: Polluted water, water pollution, water related illness.

PP-109 CURRENT LEVEL AND MANAGEMENT OF THE WATERBORNE DISEASES IN A PROVINCE

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Clean water supply is vital for human life. Still majority of world do not have access healthy water. Unfortunately main affected group are children (<5 years). Waterborne diseases are caused by different microorganisms such as viruses (noroviruses, Hepatitis A, Hepatitis E, adenovirus, rotavirus...), bacteria, protozoan parasites (Cryptosporidium sp., Giardia, Entamoeba histolytica.....). Main purpose of the present study is showing exist situation and risk level of the waterborne diseases in a city.

Study area is Mersin province which is one of the biggest city of Turkey and population around 1,7 million (about 30% population live in rural area). Number of diarrhea and gastrointestinal diseases, protozoans, viral and bacterial parasite cases were obtained and calculated for 2015-2016 years in Mersin Province.

Results showed that comparatively small number of waterborne disease cases exist in the city. More than 60.000 potential analyses per year were conducted in the city health centers. Around 20 000 diarrhea and gastrointestinal case were detected (almost half of them in children). Typhoo, Cholera, Hepatitis E did not observed but Rotavirus and Adenovirus were observed around thousand per year. Entamoeba hystolitica and Cryptosporidium were detected as risky group.

As conclusion, we need to develop a strategy for potential waterborne pathogens and pay attention to risky groups in waterborne organism to protect public health.

PP-110 WATER PRODUCTION FROM MOISTURE IN THE AIR IN ADANA PROVINCE

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All the signs, such as logarithmic increase behavior of the world population, destruction of nature beyond the speed of renewability, climate changes, contamination of water resources with domestic, agricultural and industrial wastes and many related researches indicate that a world-wide water crisis can be arise, leading to the wars in the near future. Some countries which are coastal to the sea, have established plants to obtain drinking water from salt water and have accelerated their R&D researches. Obtaining drinking water by reverse-osmosis method from the sea has increased the interest in some other alternative water production methods, due to the high energy demands as well as the difficulties of delivering the water that has been produced, to the inner and the rural areas. One of these methods that has recently become popular in the decades is the system of obtaining water from the air. Like the upper compartment of the old -fashioned refrigerators that makes ice or like the water flow through drain pipes of air conditioners, these systems intensify the moisture in the air on a cold surface. Cukurova region is well suited for the annual average temperature and high humidity rate for those systems which are operating above 18.0 °C and over 30% of humidity. Adana is one of the cities in our country, where this system can work effectively, especially in summer, with its humidity of 90% and its daytime temperature over 40 °C. In summer, it offers solutions to the community inhabiting especially in rural areas and having water-scarce. Since the principle of this technology is former, it will provide flexibility to manufacturers and developers on patent and copyright. It will also become a precaution against future water scarcity, while initiating solutions to water problems are already present.

Keywords: Sustainability, Water production, Relative humidity, Adana, Agriculture

PP-111 INVESTIGATION OF HEAVY METAL CONTENT IN SOILS FROM DIFFERENT
AGRICULTURAL AREAS OF GRAIN PRODUCED IN KARAMAN PROVINCE

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The definition of heavy metal occurs mostly when environmental problems are seen and relatively it is defined as toxic or noxious metal which has got high concentration and even in low concentration (1,2 3). That some of heavy metals in soils such as Cd, Cr, Cu, Pb and Ni have got too much concentration causes that natural water and territorial ecosystems are destroyed (3). The main goal of this study is to determine on the amount of heavy metals such as Cd, Cu, Ni, and Pb on soils from agricultural areas of Karaman. Our province, Karaman, has got quite important place in agricultural area. It is thought that some of heavy metal will accumulate in soils with the effect of environmental factors. It is very important to research this subject in terms of living creatures and human life. The samples were prepared to be 2 parallel for each sample. Soil samples were ground and dried under suitable conditions. 1 g of soil sample has been weighed and then put into beaker of 50 mL. 15 mL aqua regia has been added on it. It has been waited for 5-hours. After weighing capacity is heated to dryness on oven, 10 mL 2 M HNO₃ has been added and after it has been waited for 2 hours, it has been filtered from blue-band filter paper and it has been done ready to be analyzed as it has been completed to 25 mL. Samples have been assessed on whether there is pollution or not as they are measured by AAS method in terms of heavy metal contents. Results have been compared with values and it has been found in centers where the measurement has been done that the mean concentration of Cu and Ni elements in in soil is high, Cd and Pb are normal.

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PP-112 THE EFFECT OF DIFFERENT CONCENTRATIONS OF POLYAMINE SPERMIDINE ON SOME PHYSIOLOGICAL AND BIOCHEMICAL PARAMETERS IN PEPPER PLANTS SUBJECTED TO *PHYTOPHTHORA CAPSICI* STRESS

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Phytophthora capsici (*P. capsici*) is a highly destructive pathogen of pepper. *P. capsici* causes root and crown rot in pepper, resulting in significant economic losses, and has been regarded as one of the most important soil-borne diseases of pepper. In this study, the effect of exogenous spermidine on disease severity, length of the necrotic lesions, polyphenol oxidase activity, levels of phenolic compounds, and fresh and dry weight in two cultivars of pepper (*Capsicum annum* L.) exhibiting different tolerance to *P. capsici* stress: Kekova (*P. capsici*-tolerant), Criollo de Morelos 334 (CM-334) (*P. capsici*-highly resistant) were measured on the 3rd, 5th, and 7th days after *P. capsici* infection. Spermidine was sprayed on the leaves of CM-334 and Kekova pepper cultivars prior to inoculation. The treatment of distilled water has been performed in the control groups. The cultivar CM-334 exhibited the highest resistance to *P. capsici* followed whereas other genotype was susceptible to the disease. Treatments with spermidine prior to inoculation decreased the severity of disease, the length of the necrotic lesions in two genotypes, and increased polyphenol oxidase activity and the total level of phenolics, and fresh weight, when compared to the untreated, inoculated plants. This study showed that spermidine induced defense responses and increased resistance to *P. capsici* infection in pepper.

Keywords: Biotic stress, *Capsicum annum* L., resistance, spermidine

PP-113 TOTAL HEAVY METAL POLLUTION IN MAIZE FIELDS OF ADANA-SEYHAN REGION

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Heavy metals are primary sources of pollution in air, water and soils. Heavy metal pollution in soils have become a global concern with developing industries and agricultural practices. Maize (*Zea mays* L.) is quite common in Adana-Seyhan region produced for human and animal nutrition. Despite several studies about maize, studies about heavy metal pollution in maize fields are quite limited. Therefore, heavy metal accumulation and negative impacts of pollution on human health through food chain have become critical issues. In this study, heavy metal (Cr, Cd, Pb, Ni, Cu and Zn) concentrations in maize fields of Adana-Seyhan region were determined and a general assessment was made about the heavy pollution level of the region.

Heavy metal concentrations of 60 samples (taken from 0-30 cm profile) were determined in accordance with EPA 3051A method with atomic absorption spectrometer (AAS–Graphite Furnace Analytic Jena ContrAA-700) device.

Heavy metal accumulation levels were assessed based on Soil Pollution Control Regulations of the Ministry of Environment and Forestry. Cr concentrations of soil samples varied between 24.97-70.15 (44.60 mg/kg), Pb between 11.28-27.14(15.15 mg/kg), Cd between 2.40-8.11(4.59 mg/kg), Ni between 88.75-171.50(134.24 mg/kg), Cu between 16.56-34.66 (25.93 mg/kg) and Zn between 43.20-64.95 (55.04 mg/kg).

It is impossible to mention about heavy metal pollution in present soils, except for Cd and Ni. Fertilizers and pesticides result in heavy metal accumulation in soils. About 87% of synthetic fertilizers produced in Turkey contain Cd levels close to 8 mg/kg or 2-5 times of threshold value. Drip irrigation minimizing fertilizer consumption and providing efficient fertilization should be widespread in maize fields. Dose, method and timing of the other essential micro nutrients (Zn, Fe, Mn and Cu) should be well-arranged to supply plant needs in a balanced fashion.

Keywords: Maize, Heavy metals, Soil pollution, Human health

**PP-114 PRODUCTION OF CARBON SUPPORTED CATALYST FROM RENEWABLE BIOMASS
RESOURCE**

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Heterogeneous catalyst has received attention for liquid and gas phase chemical reactions. Apart from its advantages on reusability and ease of separation, it could be prepared from cheap biomass. Biomass is the only carbon neutral alternative to petro-derived fuels and chemicals due to its ubiquitous nature and economic feasibility. Biochar is carbon rich material generated from biomass. It can be used for soil amendment; it also offers principle strategies for carbon capture and storage. Recently, bio-char based materials used as catalyst support materials wherein metal particles with catalytic activity may decorate along the walls. Bio-char supported metal catalysts have been used for the catalysis of refinery processes, biodiesel production and air pollution control.

In this study, spruce sawdust was pyrolysed in a fixed bed reactor to produce bio-char. High-purity nitrogen was flowed at 100 ml/min. The samples were heated to 500°C at a rate of 40 °C/min. The pyrolysis lasted 10 min to ensure complete reaction. Then, 10% wt. cobalt was loaded to activated bio-char via dry impregnation method. X-Ray Diffractometer (XRD) patterns illustrate that bio-char is in amorphous form with the addition of Co peaks appeared at 36.84°, 44.58° and 59.62°, thus showing that the Co with the respective form of cubic Co₃O₄ structure dispersed on the bio-char skeleton. According to the Scanning Electron Microscopy (SEM) results, the bio-char has layered structure. Co-carbon catalyst has also layered structure. In addition to that, needle like cobalt structures are appeared on the layers. The weight proportion of cobalt was also identified by Energy Dispersive X-Ray Analysis (EDX) analysis as 11.12% wt. According to the characterization results, Co-carbon catalyst was successfully synthesized by dry impregnation method. Synthesized catalyst can be used as heterogeneous metal catalyst in chemical reactions.

Keywords: catalyst, biomass, characterization, spruce sawdust, clean production

PP-115 IMPROVING THE QUALITY OF BIOMASS FOR RENEWABLE SOLID FUEL

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Biomass is considered as one of the potential alternatives to fossil fuels due to its renewability, carbon neutrality and low emissions of sulfur dioxide (SO₂) and nitrogen oxides (NO_x). Lignocellulosic biomass mainly involves lignin, cellulose and hemicelluloses. It also contains a small amount of inorganics and extractives.

Biomass can be converted into useful energy and chemicals via biochemical or thermochemical processes. It has been demonstrated that even minor certain inorganics could alter both the thermal degradation rate and chemical pathways during biomass pyrolysis. In order to overcome these aforementioned disadvantages of biomass, it can be pretreated and upgraded via various physical and chemical techniques. Acid washing is effective to remove a large proportion of the inherent inorganics in biomass. In addition, the chemical composition and structure of biomass would change to a certain extent after acid washings.

In this study, bean pod was washed with H₃PO₄, and the quantitative analysis on the inorganics contents in bean pod before and after acid washing was conducted via X-ray Fluorescence (XRF). Fourier transform infrared (FTIR) spectrometer, scanning electron microscopy (SEM) was used to identify the difference in the chemical and morphological structures for the raw and acid washed samples. Thermogravimetric analysis (TG) was carried out to bean pod before and after acid washing to investigate the thermal stability difference between samples. Elemental composition and higher heating values of the samples were also determined by using elemental analysis and Dulong's formula. According to the characterization results, inorganic content of biomass decreased while carbon content and higher heating value increase by applying acid washing. As a result, bean pod waste obtained from food factory is more fruitful to use as an energy resource after acid washing.

Keywords: Renewable energy, biomass, sustainability, solid fuel

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**PP-116 AN EVALUATION IN THE TERMS OF ETHICS REGARDING CIVIL DISOBEDIENCE
MOVEMENTS AGAINST ANTI-ENVIRONMENTAL POLICIES**

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Respect for the environment is a universally accepted principle and there are national legal regulations for environmental protection all over the world. However, in many examples these regulations are forced, deformed, or broken by official authority itself. In such situations environmental activists and the people who will be directly harmed by the environmental problem react against ones take advantage of destroying the environment and the official forces supporting them. Sometimes these reactions go beyond the scope of legality and become civil disobedience movements.

Civil disobedience movements are non-violent passive resistance acts not in line with current laws. They are performed when legal ways of objection are exhausted, and their purpose is to bring the problem into the agenda of the national and international societies, thus creating pressure on official authorities.

The aims of this paper are to evaluate various kinds of civil disobedience movements in order to prevent damage to the environment in the terms of ethics and to open a discussion regarding acceptability and efficiency of not to obey legal regulations in the name of moral legitimacy.

**PP-117 POSITIVE AND NEGATIVE IMPACTS OF AGRICULTURE ON ENVIRONMENT IN
DEVELOPING COUNTRIES**

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Agricultural activities use natural resources for production. These resource are guide and unclaimed public domain (irrigation water, grasslands, agricultural fields, etc.). For this reason it is consumed excessively and quickly. The environment itself is not able to overcome the damage caused by the destruction. Excessive grazing, excessive water consumption, over-watering of crops, over-spraying and fertilization are major environmental damages. Agriculture and environment are connected with each other. Agricultural activities have many negative effects on environment but also positive impacts if sustainability considered. It has many benefits such as conserving the natural balance, sustainable environment, healthy products and biodiversity. In this paper, secondary data was used to compare the positive and negative effects of agriculture on environment. The economies of the underdeveloped and developing countries depend significantly on agricultural activities. Because of this, agricultural activities are carried out intensively. Improved technology, heavy use of agricultural inputs and unintended use of land have negative effects on environment. But it can be reduced by more efficient implementation of agricultural extension activities. Agricultural extension activities are very important to educate people in sustainable agriculture to protect environment. The producers must be absolutely warn when agricultural activities are carried out. Especially the use of chemicals and fertilizers used in agriculture should be kept under control. As the degree of intensiveness in agriculture increases, the negative effect on the environment also increases. Agricultural and industrial cooperation should be improved in this respect. Agricultural extension services need to be facilitated and activated. Rural development is measured not only by economic but also by environmental development. The use of natural resources must be done in a conscious and controlled manner.

Keywords: Agriculture, environment, pollution, awareness, agricultural extension.

**PP-118 EVALUATION OF ORGANIC FARMING AND CONVENTIONAL AGRICULTURE IN
TERMS OF ENVIRONMENT**

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As the world population continues to increase, food needs increase too, The contribution of agricultural production is great in terms of nutrition. Agriculture is traditionally realized in Turkey. Therefore, the use of inputs is excessive in agriculture. But, people's preferences have begun to change in recent years. We have been directed to different products besides the need for nutrition. This situation arises from both environmental and human health as well as new preferences. In addition, producers engaged in agricultural activities in order to obtain better quality and healthier products are oriented towards good agricultural practices and organic farming. The aim of this study, evaluation of the effects of organic farming and conventional agriculture on environment and health in Turkey. It was prepared from reports using national and international studies. According to TUIK 2016 data, it has been determined that approximately 14 million tons of chemical fertilizers and 50 thousand tons of pesticides are used in Turkey. These chemicals are a great threat when used unconsciously for now and future generations. In addition, factors such as irregular tillage and irrigation, agricultural wastes (crop and animal) have negative effects on the environment. It has shown a steady increase the number of farmers engaged in organic crop production, number of crops, planting area in recent years. Although, this increase has decreased after 2015, the production amount has continued to increase because of the increase in the yield obtained from organic farming. However, it is thought that the demand for these products is inadequate because of the high prices of organic products, lack of information of consumers and having less yield than conventional farming in Turkey. Organic farming should be encouraged in terms of environmental and human health. Nutrition is the main requirement of all living beings is to be given more place in the country politics.

Keywords: Organic agriculture, traditional agriculture, chemical fertilizer, pesticides, environment.

PP-119 CHROMIUM-INDUCED OXIDATIVE STRESS IN ROOT CELLS OF *ALLIUM CEPA L.*
(*AMARYLLIDACEAE*)

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Malondialdehyde (MDA) is the organic compound with the formula $CH_2(CHO)_2$. MDA level is commonly known as a marker of *oxidative stress*. Chromium ($K_2Cr_2O_7$) is an abundant heavy metal in nature, toxic to living organisms. In the present study, effects of chromium ($K_2Cr_2O_7$) were investigated on oxidative stress in root cells of *Allium cepa L.* For this aim, we used the MDA level as indicators of oxidative stress.

The seeds in all the treatment groups were treated with three different doses (2.4, 8 and 12.5 mg/L) of chromium ($K_2Cr_2O_7$) for 72 h.

The results showed that there were significant alterations in the MDA levels of the roots exposed to chromium ($K_2Cr_2O_7$) compared to control group. 2.4, 8 and 12.5 mg/L doses of chromium ($K_2Cr_2O_7$) significantly enhanced the lipid peroxidation and caused an increase in MDA levels. Each dose of chromium ($K_2Cr_2O_7$) caused oxidative stress in root cells of *A. cepa*, and the maximum effect was observed at the dose level of 12.5 mg/L.

The results indicate that chromium ($K_2Cr_2O_7$) increased lipid peroxidation in the root cells of *A. cepa* seeds in a dose dependent manner.

Keywords: *Allium cepa*, oxidative stress, chromium, malondialdehyde.

PP-120 TOXIC EFFECTS OF NICKEL ON PHYSIOLOGICAL PARAMETERS OF *ALLIUM CEPA* L.
(*AMARYLLIDACEAE*)

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Nickel (NiCl₂) is one of many carcinogenic metals known to be an environmental and occupational pollutant. This *study* aimed to estimate the toxic effects of different doses of Nickel (NiCl₂) on *Allium cepa* L. The root length, germination percentage and weight gain were used as toxicity indicators.

The seeds were separated into four groups: one as control and three as Nickel (NiCl₂) treatment groups. Nickel (NiCl₂) doses of 0.25, 0.5 and 1.0 ppm were used in treatment groups during 72 h.

The results of our study indicated that Nickel (NiCl₂) showed a dose-dependent inhibitory effect in the root length, germination percentage and weight gain on *Allium cepa* L. Increasing the dose of Nickel (NiCl₂) significantly decreased root length, germination percentage and weight gain in all of the treatment groups. The highest rate for root length, germination percentage and weight gain were observed in the control group.

The *results showed* strong *toxic* potency of Nickel (NiCl₂) at certain concentrations. Combination of selected physiological parameters such as root length, germination percentage and weight gain are very sensitive and useful biomarkers for bio-monitoring of these effects.

Keywords: *Allium cepa*, nickel, physiological parameters.

PP-121 SOIL CO₂ FLUX RESPONSE TO DIFFERENT DOSAGE OF PHOSPHORUS FERTILIZER

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Agricultural soils have significant environmental impact on greenhouse gas (GHG) emissions. In general, soil air has a higher CO₂ (1–10 %) and lower oxygen (5–10 %). The rate of CO₂ exchanging is regulated by the CO₂ rate production and concentration gradient in soil, soil characteristics and temperature. CO₂ fluxes from agricultural fields might be also affected by organic amendments, fertilization, irrigation and root biomass. The aim of this study was to investigate fertilization impact on CO₂ flux. Effect of the wheat (*Triticum aestivum* L.) growth under different dosage of P-fertilization (p-0, p-50, p-100, p-200 kg ha⁻¹) on soil CO₂ flux were studied in a field experiment in Çukurova university research farm, in February - May 2017. Additionally, CO₂ flux of barren soil with no cover crop was measured as control plots. Soil-atmosphere CO₂ exchanges were measured with the static chamber method (8100, LI-COR, Lincoln, USA), which represents summary of organic carbon decay, root and microbial respiration, litter decomposition and CaCO₃ dissolution. At February stage, under 12° C, barren soil flux shows 1,8 CO₂ μmol m⁻² s⁻¹ and all treatments showed similar results around 2,7 CO₂ μmol m⁻² s⁻¹. Since rising temperature up to 20° C at March stage, all treatments increased fluxes, P-100 reaches 7.97 CO₂ μmol m⁻² s⁻¹, P-0 was 5,39 CO₂ μmol m⁻² s⁻¹, barren soil showed 3.48 CO₂ flux μmol m⁻² s⁻¹. At May stage, temperature raised up to 33,1° C, all treatments showed no difference and had lower flux compare to March stage, with mean 4-5 CO₂ μmol m⁻² s⁻¹, barren soil was 2,5 CO₂ μmol m⁻² s⁻¹. Results shows that fertilization did not significantly affect the CO₂ flux, neither the increasing temperature. However, found differences of CO₂ flux between March-May period were determined to be related to wheat maturity.

**PP-122 EFFECTS OF VITAMIN C ON PATHOLOGY AND CASPASE-3 ACTIVITY OF KIDNEYS
WITH SUBACUTE ENDOSULFAN TOXICITY**

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Endosulfan is an insecticide that is composed of two stereoisomers: alpha- and beta-endosulfan in an approximate ratio of 70: 30. Owing to its widespread use, poisoning of both humans and animals is possible. We examined the toxic effects of endosulfan on New Zealand white rabbit kidneys. Rabbit kidneys were examined histopathologically and caspase-3 activity was detected using immunohistochemistry. Animals were divided into four groups: Group 1 was given a sublethal dose of endosulfan in corn oil by oral gavage daily for 6 weeks, Group 2 was given endosulfan + vitamin C during the same period, Group 3 was given corn oil daily and vitamin C on alternate days, Group 4 was given only corn oil daily throughout the experiment. By the end of experimental period, the concentration of alpha-endosulfan was greater than the beta-endosulfan concentration in the kidneys of both of endosulfan treated groups (Groups 1 and 2). Decreased accumulation of alpha -and beta-endosulfan was observed in Group 2, possibly because of the antioxidant effect of the vitamin C. Histopathological examination revealed hemorrhages, tubule cell necrosis, glomerular infiltration, glomerulosclerosis and proteinaceous material in the tubules, and Bowman spaces in the kidneys of Group 1. Caspase-3 reaction was stronger in Group 1 than in the other groups. Apoptotic activity was most frequent in proximal tubule cells. Endosulfan is toxic to rabbit kidneys. Vitamin C treatment reduced the accumulation of endosulfan in kidneys and reduced its toxicity.

Keywords: endosulfan; immunohistochemistry; kidney; pathology; rabbits; toxicity

PP-123 OCHRATOXIN A AND ITS EFFECTS

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Ochratoxin A is a fungal secondary metabolite that has toxic effects to humans and animals. Its toxic property was first identified in 1965 and then studies in mid-1980 showed that the toxin is also carcinogenic to animals. Farm animals receive the toxin through their food intake and the toxin reaches to humans directly with consumption of plant originated nutrients or indirectly with the consumption of animals who fed with the toxin contaminated food.

Toxic and carcinogenic properties of the toxin were studied in several animal groups and it is found that the toxin is primarily toxic to kidney and liver and it also causes specifically kidney tumors. It is also found that ochratoxin A has more toxic toxicity and carcinogenic effect to males compared to females. In this paper, pathological and toxic effects of ochratoxin A will be discussed.

Keywords: Ochratoxin A, pathological and toxic effects.

E-POSTERS

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EP-1 IMPORTANT PESTS AND THEIR BIOLOGICAL CONTROL IN GREENHOUSE VEGETABLE GROWING IN TURKEY

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Turkey has an important place in terms of vegetable production potential among worldwide. The vegetable sector, which is carried out in the form of industry, open and greenhouse, also includes different industrial branches. The development of the sector for the equipment used in production has played a role in the advancement of the industry, the establishment of modern greenhouses, the introduction of landless agricultural techniques, the acceleration of breeding studies, the development of different methods for controlling disease and pests, and the transfer of research results to practice. With the increase in production and quality, Turkey also has the chance to market its products in foreign markets. With the use of intensive chemical inputs in vegetables, vegetables have returned to environmentally friendly production systems due to health value and chemical residues. The adverse effects of pesticides used in chemical control on the environment and human health have caused efforts to reduce the use of pesticides. One of the alternative methods of chemical control is the biological control where natural enemies are used. Every year in Turkey, in order to obtain insecticide-free products in the growing of greenhouse vegetable growing increasing in terms of quality and quantity, importance is attached to the application of biological control and various biological control agents are licensed. The most commonly used natural enemies against pests are; parasitoids, predators, mites, bacteria, fungi and nematodes. This review focuses on the major pest species in greenhouses in Turkey, the agents used in the biological control of these pests and the cases that need to be considered in the biological control.

**EP-2 EVALUATION OF THE EFFECT OF INDUSTRIAL AND ENVIRONMENTAL FACTORS ON
HEEL SPUR IN ANATOLIAN CIVILIZATIONS**

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Objective: The heel spur is the bony protrusion seen especially on the dorsal and plantar face of the calcaneus bone at the attachment site of the muscles. It was aimed to investigate the effect of environmental factors on the heel spur in the skeletons belonging to the Late Eastern Roman, Byzantine and Medieval periods which lived in ancient times in Anatolia.

Material and Method: The 251 calcaneus bones of 137 (23 had unilateral calcaneus, 114 had bilateral sides of) skeleton, which had been analyzed paleodemographically and dated to Late Eastern Roman, Byzantine and Medieval periods and lived in Anatolia were examined in terms of heel spur.

Results: In our study, the presence of dorsal, plantar and bilateral heel spur were 43.9%, 11.1% and 10.3%, respectively according to each calcaneus (n=251). In addition, the presence of heel spur in 114 skeletons with both calcaneal bones was determined as 46.5% in this study.

Discussion: When we analyze the previous researches, the presence of heel spur was observed in 26.5% in Indian society and 15.7% in another research depending on the radiological images of the Caucasian population. Also it was 34.2% in 117 skeletons of prehistoric hunter-gatherer population in America and 13% in 54 skeletons belonging to the San and Khoi skeleton collection. In our study, the presence of heel spur was on 114 skeleton in the ancient societies who lived in Anatolia were seen as 46.5%.

Conclusion: When we compare our studies with studies done on contemporary and prehistoric societies, the presence of heel spur was found very high. We think that this situation may be due to heavy labor force, environmental and socio-cultural differences in ancient Anatolian societies.

**EP-3 ANALYSIS OF ARTICULAR FACET VARIATIONS AND ENVIRONMENTAL RELATIONS IN
ANCIENT ANATOLIAN CIVILIZATIONS**

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Objective: Calcaneus forms talocalcaneal joint with talus. There are three facets at the upper side of talocalcaneal joint: anterior talar facet, middle and posterior. We aim to investigate the effects of genetic and racial differences on the joint surface differences on the calcaneus bone as well as whether the environmental factors are effective in skeletons that lived in ancient times in Anatolia.

Material and Method: 197 calcaneus bones of 109 skeletons in Kırşehir Ahi Evran University, Department of Anthropology were examined. The types of articular facets on the calcaneus were evaluated using the classification of Bunning & Barnett and Campos & Pellico. Digital caliper was used with 0.01 mm accuracy in the measurements. **Results:** In the 197 calcaneal bones analyzed, type A₁ was 11.16%, type A₂ 7.10%, type A₃ 5.58%, type B₁ 16%, type B₂ 58.88% and type C 0.5% while Type A₄ is not detected.

Discussion: It is seen that Type A and Type B are considerably higher than others related to the distribution of variants of the calcaneal joints in societies living in different geographical regions during the same historical periods. In Anatolian skeletons belonging to ancient societies, type B is found to be quite higher than the others as our study. In addition, we observed that type B is quite higher than type A in the ancient Anatolian societies when we compare with the researches based on the contemporary Anatolian society.

Conclusion: Due to our data, Type B is found higher in our group. Therefore, we think that this difference in the distribution of varieties of the calcaneus joints in skeletons of different historical periods in Anatolia is not only related to racial and genetic features but also social, cultural, economic, biological and environmental factors play an important role.

**EP-4 INVESTIGATION OF TOXIC, GENOTOXIC AND CYTOTOXIC EFFECTS ON ALLIUM CEPA
AND CAENORHABDITIS ELEGANS TEST SYSTEMS OF VARIOUS NANOPARTICLES**

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In this study, it was aimed to investigate the toxic, genotoxic and cytotoxic effects of some nanoparticles on two different model organisms. Doses of 25, 50 and 100 ppm of titanium dioxide, copper oxide, aluminum oxide, silicon oxide and zinc oxide were applied to *Allium cepa* and *Caenorhabditis elegans* organisms for 12 and 24 hours, respectively. It was determined that all doses of the substances used at the end of the study decreased mitotic index and increased chromosomal abnormalities in *Allium cepa*. It has been determined that the life span of the *C. elegans* is reduced.

**EP- 5 EFFECT OF 1800 MHZ RADIOFREQUENCY RADIATION ON P21 AND CASPASE-3 GENES
EXPRESSION LEVEL IN RAT LIVER TISSUE**

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Purpose: As mobile phone usage increases, research on human health of mobile phone radiation has increased. p21 is an apoptotic agent and caspase-3 is an endoprotease providing apoptosis. We aimed to investigate the effect of 1800 MHz radiofrequency radiation on the *p21* and *caspase-3* genes expression levels in rats liver tissue.

Method: 21 Wistar albino female rats were divided into three groups; experimental, sham and control. The experimental group were exposed to 1800 MHz radiofrequency radiation for 2h/day for 8 weeks. Control group were kept in their own conditions. Sham group were kept in the same conditions with experimental group without EMF exposure. The rats livers were removed and total RNA was extracted from whole liver homogenate. cDNA was synthesized from total RNA and gene expression levels were determined with Real-Time PCR.

Findings: *Caspase-3* expression level increased in the exposed group according to sham and control group ($p < 0,001$). However, the level of *p21* expression didn't altered ($p = 0,435$).

Conclusions: The results showed that *caspase-3* expression level increased in rat liver. But *p21* expression level didn't altered.

Discussion: Our results showed that 1800 MHz mobile phone radiation increased *caspase-3* gene expression level in liver. In the literature review, there was no study about *caspase-3* and *p21* expression level in liver exposed by mobile phones radiation. But there were studies at different radiation levels in rats liver. For example, in the study conducted by Zeng et al., *p21* expression level in rats liver exposed to 8 Gy radiation significant increased. In study conducted by Jimenez et al., showed it didn't alter *caspase-3* expression in rat liver exposed to 120 Hz low frequency radiation. Further investigations should be performed to support our findings.

Note: This study was supported by Mersin University (BAP: 2016-2-TP2-1890).

**EP-6 EFFECT OF DIFFERENT FACTORS ON PARTICLE MATTER MODELLING AROUND
POLLUTION SOURCE AREA**

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Particulate matter (PM) term used to describe the mixture of solid particles including liquid droplets in the air. This can be either human-made or naturally occurring. Some examples include dust, ash and sea-spray. Particulate matter (including soot) is emitted during the combustion of solid and liquid fuels, such as for power generation, domestic heating and in vehicle engines. Particulate matter varies in size (i.e. the diameter or width of the particle). PM_{2.5} means the mass per cubic metre of air of particles with a size (diameter) generally less than 2.5 micrometres (µm). PM_{2.5} is also known as fine particulate matter (2.5 micro metres). Inhalation of particulate pollution can have adverse health impacts, and there is understood to be no safe threshold below which no adverse effects would be anticipated. The biggest impact of particulate air pollution on public health is understood to be from long-term exposure to PM_{2.5}, which increases the age-specific mortality risk, particularly from cardiovascular causes. Several plausible mechanisms for this effect on mortality have been proposed, although it is not yet clear which is the most important. Exposure to high concentrations of PM (e.g. during short-term pollution episodes) can also exacerbate lung and heart conditions, significantly affecting quality of life, and increase deaths and hospital admissions. In this investigation factors which have effect on pollution level and modelling of particle matter.

Keywords: Particulate matter, Pollution, Modelling, Source Area

EP-7 KINETIC STUDY OF RHODAMINE B REMOVAL FROM WASTE WATER USING VAN PUMICE

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Summary

In this study, it is aimed to purify Rhodamine B dyestuff from waste water by using Van pumice. The samples were taken and the data were applied to the first order and second order kinetic models. As a result, it was observed that the data are appropriate to second-order kinetic model.

Material and Method

1) The milling process; Pumice was primarily pulverized into powder and then sieved through a 230 mesh screen. After being stirred for 3 hours in 1 liter of water, pumice was placed in storage containers for use in experiments after it was dried by oven drying method at 45 ° C.

2) Preparation of the solution; 1 g of Rhodamine B was taken and it was completed to 1 liter in volumetric flask. In 30 ppm, 40 ppm, 50 ppm and 60 ppm concentrations, Rhodamine B solutions prepared at pH 5, were shaken at 298 K, 308 K and 318 K temperatures and at different times. Concentration was studied depending on temperature and time by keeping the Rhodamine B adsorption pH constant at 5 inside the pumice sample. All adsorption measurements were made with T80 + UV/VIS model spectrophotometer.

Table 1. Second order kinetic calculations (50 mg/L)

T (K)	k_2	Theoric q_e (mg/g)	Experimental q_e (mg/g)	R^2
298	0,0013	17,9179	14,7925	0,9624
308	0,0023	17,1229	15,1630	0,9829
318	0,0034	17,1020	15,7030	0,9939

Discussion and Conclusion

Our work has been directed towards the removal of Rhodamine B from waste water using Van pumice. The resulting samples were centrifuged at the end of the study.. When we look at the data, because the correlation value of the process is large, it is concluded that it is appropriate to second order kinetic model.

EP-8 THERMODYNAMIC AND ISOTHERM STUDIES OF RHODAMINE B REMOVAL FROM WASTE WATER USING VAN PUMICE

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Summary

In this study, it is aimed to remove Rhodamine B dye from waste water by using Van pumice. The samples were taken and applied to Freundlich and Langmuir isotherm models and the process was found to be compatible with the Freundlich isotherm model.

Material and Method

1) **The milling process;** Pumice was primarily pulverized into powder and then sieved through a 230 mesh screen. After being stirred for 3 hours in 1 liter of water, pumice was placed in storage containers for use in experiments after it was dried by oven drying method at 45 ° C.

2) **Preparation of the solution;** 1 g of Rhodamine B was taken and it was completed to 1 liter in volumetric flask thus 1000 ppm stock solution was prepared. In adsorption equilibrium studies 2 g of pumice were treated with 1000 L Rhodamine B solutions. In 30 ppm, 40 ppm, 50 ppm and 60 ppm concentrations, Concentration was studied depending on temperature and time by keeping the Rhodamine B adsorption pH constant at 5 inside the pumice sample.

Discussion and Conclusion

In this study, the adsorption study of Rhodamine B on Van pumice was examined. The resultant was applied to the Langmuir and Freundlich isotherms and adsorption was found to conform to the Freundlich isotherm. As a result of adsorption, when ΔH is greater than zero it indicates that the process is endothermic, and when ΔS is also greater than zero it indicates that the irregularity in adsorption increases. The process is spontaneous and this can be explained by the fact that ΔG is negative. All these results show that the Rhodamine B adsorption process on Van pumice is a appropriate method.

**EP-9 INSTITUTIONAL RESPONSIBILITIES FOR MONITORING OF ENVIRONMENTAL
POLLUTION**

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Monitoring of environmental pollution, in other words periodically assessing the characteristics of environmental components with several techniques, is carried out primarily in order to determine environmental impacts of human activities, then to increase the awareness of cause-effect relationship between this activity and environmental change. Monitoring of environmental pollution is important in terms of taking reliable and transparent investment decisions in addition to bringing forward solution proposals. Monitoring of environmental pollution data provides to gain access to tangible data about creating a public opinion on environment protection and human health as well. Environmental monitoring is required for any programme or policy aim at bringing environmental degradation under control including environmental pollution control.

When the institutional studies carried out in Turkey are examined, it is seen that technical and scientific studies are promoted and the activities including process of public participation are carried out. Within this scope, the activities conducted by Ministry of Forestry and Water Affairs, Ministry Of Environment and Urbanisation and Ministry of Health come into prominence.

In this study, the legal and institutional responsibilities for effectively monitoring of environmental pollution are examined and effectiveness of them is discussed.

Keywords: Environment, Environmental pollution, environmental monitoring

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October 23-25, 2017

Adana-TURKEY

EP-10 EVALUATION of STONE QUARRIES in VAN PROVINCE within the SCOPE of LEGISLATION

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Van is one of the biggest provinces of Turkey in terms of surface area. Van, which is mostly composed of high, rugged and mountainous areas, has only a limited number areas suitable for settlement. Van is the third developed industrial city in its region. Main factories are; sugar, cement, meat and meat products, dairy products and feed. In addition, small scale construction materials such as ready mixed concrete, pumice and limestone quarries, mining, asphalt work-sites and structural elements of organized industrial areas also operate in Van province. There are 92 stone quarries, as small scale industry, in the Van province. This study will examine a stone quarry from small scale industrial enterprises operating in Van province; and investigate water pollution, air pollution, soil pollution and some other important pollutions in terms of relevant legislations. As a result of the research, the present study will analyze the legislative appropriateness of sectors; and detect their damage to the environment within the framework of legislation. In this context, the quarry facilities will be visited, especially the central points of activity will be investigated and then sources of pollution will be determined. The identified pollution sources will be compared within the framework of the relevant legislation. If the research result is positive, then the continuity of the measures taken at the firms will be discussed, but if a non-conforming activity or process is encountered, the relevant competent authorities will be informed about the problem so that the legislation can be put in place. Furthermore, after comparison of the sectors, this study will investigate which sector is more environmentally friendly in terms of legislative compliance. Thus this study will show to what extent active the legislation and facility relation is.

EP-11 INVESTIGATION OF THE NaBr - Ba(H₂PO₂)₂ - H₂O WATER-SALT TERNARY SYSTEM AT +50°C

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In this study, solubility and phase equilibria of NaBr - Ba(H₂PO₂)₂- H₂O ternary system existing in [A⁺, M⁺⁺/ X⁻, (H₂PO₂)⁻ // H₂O (A⁺= Na⁺, K⁺, NH₄⁺ vs.) ; (M⁺⁺= Ba⁺⁺, Mg⁺⁺, Cu⁺⁺, Ni⁺⁺ vs.) ; (X⁻ = Cl⁻, Br⁻, I⁻ etc.)], Na⁺, Ba²⁺/(H₂PO₂)⁻//H₂O quaternary mutual water-salt system were investigated. The solubility and phase equilibrium in the NaCl – BaCl₂ –H₂O water-salt ternary system has been investigated by the isothermal method at +50°C. In the first place, 100 mL distilled water was added into a 100 mL volumetric flask and each time 10 g NaBr was added until solubility point of NaBr. Each addition was followed by mixing two hours and leaving one hour. Having established solubility point, density and conductivities were determined at this point. To this system, 2 g Ba(H₂PO₂)₂ was added. After each process, 2-3 mL was taken and dried in an oven fixed at 110 °C. Then this dried product was dissolved in 100 mL distilled water and Ba²⁺, Br⁻, (H₂PO₂)⁻ ion analyses were carried out.

In the second place, solubility point of Ba(H₂PO₂)₂ at 50⁰C temperature was established and each time 10 g NaBr was added into this solution.

It was determined that NaBr- Ba(H₂PO₂)₂- H₂O ternary water-salt system was belong to eutonic system type and the composition of eutonic point was 48.62, 5.21 and 46.17 (w/w %) for NaBr, Ba(H₂PO₂)₂ and H₂O, respectively. In this point invariant two phase solid following are in equilibrium: NaBr and Ba(H₂PO₂)₂.H₂O.

Keywords: NaBr-Ba(H₂PO₂)₂-H₂O Ternary water-salt system, Phase equilibrium, , Solubility, Eutonik point, Isothermal system.

EP-12 KINETICS STUDIES OF ZINC ADSORPTION ON VAN PUMICE

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Environmental pollution is one of the most important problems of this time. Adsorption is used for many years for solve this problem. Heavy metal used for metals whose physical properties are greater than 5 g/cm³. Adsorption is a cheap and effective method for use remove ions or molecules from water. For this; clay, pumice and active carbon often use because of they pores.

In this study we calculated adsorption of zinc heavy metals on Van pumice between 298K and 308K temperatures. Dynamic equilibrium was reached after 110 min. Parameters of calculated for kinetics models show that the kinetics of sorption onto the pumice has indicated good compliance with the second kinetic model. The correlation factor R² was found R² = 0,9982.

EP-13 THERMODYNAMIC AND ISHOTERM STUDIES OF ZINC ADSORPTION ON VAN PUMICE

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Pollutants quickly pollute the environment and effect live from one to another via the food chain. For years, scientists have used different methods to solve this problem. Heavy metal used for metals whose physical properties are greater than 5 g/cm³. Adsorption is an cheap and effective method used to remove contaminants from wastewater. Clay, pumice or active carbon, which have pores, use adsorption for remove contaminants.

In this study calculated adsorption of zinc on pumice at 298 – 308 K. Dynamic equilibrium was reached after 110 min. Adsorption process has better compliance with the Freundlich adsorption model than the Langmuir model. When we look at thermodynamic data, we can say that the process is endothermic and spontaneous.

**EP-14 DETERMINATION OF THE LEAD AND CHROME AMOUNT IN WATER SAMPLES FROM
THE RURAL AREAS OF VAN PROVINCE**

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The natural settings in which living beings live is known as the environment. Environmental pollution has become one of the most important problems after the development of the rapidly changing industry. It is known that the limit of waste treatment capacity and durability of nature is very high within its functions. Rapidly growing population and therefore the development of the industry has brought environmental pollution and pollution of water resources as a negativity. Today, one of the pollution parameters in drinking and utility water is heavy metals and they pose a great danger for public health. One of the most important sources of this pollution is industrial wastewater. Heavy metals, the most important pollutants in the water, pass to plants and animals. The use of both vegetable and animal products as nutrients in humans results in the accumulation of heavy metals in the human body. Various physical, chemical and biological treatment methods can be used to remove heavy metals from wastewater. In some cases, an effective combination of over-processing may be required.

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**EP-15 DETERMINATION OF THE SALINITY OF THE SOIL SAMPLES TAKEN FROM THE
RURALS OF VAN PROVINCE**

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As a known fact in the world, every 10 million lands become unavailable for salinity reasons. The major elements causing salinity are Chlorine, Sulfate, Sodium, Calcium and Magnesium. The water from excessive irrigation and carries some minerals to deeper levels of the soil and then moves upwards with the effect of the capillarity, leaving the minerals in the earth to the soil surface, and consequently, salinity occurs. Salinity causes adverse effects such as toxic effect and water deficit in plants. Saline waters can be used for growing plants with high salt tolerance while also being treated.

EP-16 REMOVAL OF CATIONIC DYE IN AQUATIC MEDIUM BY USING A NEW COMPOSITE MATERIAL

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Dyes are colour organic compounds which can colorize the other substances. Dyes are used in many industries such as food, paper, carpets, rubbers, plastics, cosmetics, and textiles in order to color their products. The discharge of colored wastewater from these industries into natural streams has caused many significant problems such as increasing the toxicity and chemical oxygen demand of the effluent. The extensive use of dyes causes environmental problem in the ecosystem [1]. Adsorption has been an effective separation process for a wide variety of applications, especially for removal of non-biodegradable pollutants (including dyes) from wastewater [2]. Most commonly used adsorbents are clays, zeolites, diatomites, natural and synthetic polymers. Especially, polymers are preferred due to selective structural properties when they are prepared for a molecule or ion. In this study, a new composite material was synthesised from polyacrylamide (PAA) and diatomite (D). Then, the adsorption properties of new material was examined for methylene blue. The obtained adsorption isotherms can be seen in Figure 1. The maximum adsorption capacity of adsorbent was calculated as 0.019 mol kg⁻¹ based on Langmuir model.

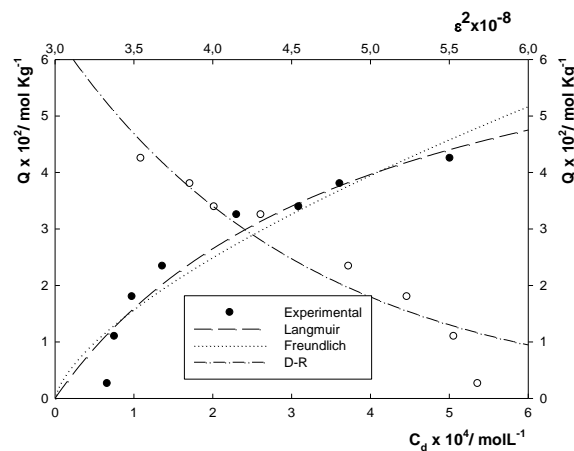


Figure 1. Experimentally obtained adsorption isotherms MB and their compatibility to Langmuir, Freundlich and D-R models.

INTERNATIONAL CONGRESS OF HEALTH AND ENVIRONMENT

October 23-25, 2017

Adana-TURKEY

Keywords: Methylene blue, Adsorption, Polyacrylamide, Diatomite

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**EP-17 INVESTIGATION OF ATMOSPHERIC DEPOSITION OF SOME NATURAL
RADIONUCLIDES (^{210}Po , ^{210}Pb , AND ^7Be) IN AEGEAN REGION**

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Recently, the use of radioisotopes in environmental studies is increasing. These radioisotopes are emitted from natural and anthropogenic sources in the environment and can remain in the atmospheric, marine and terrestrial environments for many years. Some of these radioisotopes directly pollute the environment, while others give important information about the transport of pollutants into the environment. The annual ^{210}Po flux was found as $34.8 \text{ Bq m}^{-2} \text{ y}^{-1}$ in Aliğa, $29.2 \text{ Bq m}^{-2} \text{ y}^{-1}$ in Bornova, $21.1 \text{ Bq m}^{-2} \text{ y}^{-1}$ in Dikili; the annual ^{210}Pb flux was found as $41.7 \text{ Bq m}^{-2} \text{ y}^{-1}$ in Aliğa, $43.6 \text{ Bq m}^{-2} \text{ y}^{-1}$ in Bornova, $28.6 \text{ Bq m}^{-2} \text{ y}^{-1}$ in Dikili; the annual ^7Be flux was found as $1391 \text{ Bq m}^{-2} \text{ y}^{-1}$ in Aliğa, $1253 \text{ Bq m}^{-2} \text{ y}^{-1}$ in Bornova, $1122 \text{ Bq m}^{-2} \text{ y}^{-1}$ in Dikili between November 1, 2014 – October 31, 2015. The ^{210}Po and ^{210}Pb concentrations were measured with an alpha spectroscopy system, while the ^7Be concentrations were measured with a gamma spectroscopy system. In the study ^{210}Po flux was higher in Aliğa and Bornova regions. It is thought that the intensive industrial activities in Aliğa and the cement factories in Bornova are connected with high fluxes. In order to better evaluate the effects of these radionuclides, continuous monitoring stations in various locations within the province are considered to be beneficial.

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EP-18 HEAVY METALS ACCUMULATION BY PLANTS AND EFFECT ON NUTRITION OF FOOD

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Metals concentration is very in in soil, aqueous and aerosol samples around metal mining area. Increasing metal concentration is acceleration metal content of plant tissues growing in these environment. The aim of this study is shows that metal values of the toxic metals in aerosol water and soil samples using different methods. Some plants have resistance and have also remediation ability for metals. This accumulation may be used reducing metal content in environment but this accelerate in plant tissue. Increasing metal content in plant tissue accelerate metal accumulation in food chain. This investigation review accumulation ability of different type of plant category.

Keywords: Heavy metals, Soil, water, aerosol, phytoremediation, accumulation

EP-19 POSSIBLE EFFECTS ON HUMAN HEALTH OF CYANOTOXINS IN SEAFOOD

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Objective: In this review, aimed to draw attention to the cyanotoxins, which have been highly-studied around the world, but it has low-level subjected to the research in our country. The fact that these aquatic toxins, which are widespread throughout the world with the reason of global climate change, should be followed and the early adoption of measures to be taken is extremely important in terms of environment and human health for our country.

Introduction: Toxic cyanobacteria populations have been reported in freshwater, lagoons, coastal and marine environments in at least 45 countries worldwide. Cyanobacteria, which have a lot of species-bearing groups of photosynthetic gram-negative prokaryotes (*anabaena*, *aphanizomenon*, *lyngbia*, *microcystis*, *oscillatoria*, *nostoc* etc.) produce secondary metabolites known as toxins (anatoksin a, microcystin LR, MR, RR, hepatotoxin cylindrospermopsin etc.) for mammals.

Conclusion: People are exposed to toxins by the way drinking contaminated water, consuming dish foods, or recreational activities like as swimming. For example, there is evidence of microcystin accumulation in fish and freshwater mussels consumed by humans. Due to contamination of irrigation water, the eatable herbs cause to expose. Because of the contamination of water of a hemodialysis unit, 50 patients have died in Brasil in 1996. Although there are very few epidemiological studies on the effect of poison in humans, Yu (1995) determined a relationship between surface waters and primary liver cancer. Due to the increase in mortality cases observed in humans and animals due to microcystin, the recommended limit by the World Health Organization for drinking water is 1 µg/l for microcystin-LR. However, for our country, it is of great importance to follow the annual cycle of cyanobacteria in order to investigate the acute and chronic effects of consumption of contaminated water with blue green algae toxins to the human health, and to manage it.

**EP-20 COMPOSITION AND CLASSIFICATION OF THIRTY SELECTED METALS IN RHEUM
HERBS GROWN AT IRAQ KURDISH REGION AND SIIRT, TURKEY BY CHEMOMETRIC
ANALYSIS**

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Medicinal herbs are well known beneficial effects on human health because of their chemical constituents (Ansari et al., 2004). Studies on their metal contents have been limited while many studies have been done with organic content. *Rheum* is well known medicinal herb and has been indicated that has a range of bioactivities (Ibrahim et al., 2016). This study aimed to find out the concentration of thirty metals (Li, Be, B, Na, Mg, P, K, Ca, Ti, V, Cr, Mn, Fe, Co, Ni, Cu, Zn, As, Se, Sr, Mo, Cd, Sn, Sb, Ba, La, Ce, Pt, Tl and Pb), compare the levels of them and subjected to various chemometric analysis between metal contents and place of cultivated Rhubarb for classification purposes. Samples were collected from Iraqi Kurdish Region (Sor, Rash, Karajar, Gara and Qalandar) and Siirt, Turkey (Pervari and Şirvan). After acid digestion of samples by the microwave, metal analysis was carried out with ICP-MS (Thermo Scientific ICAP Q ICP-MS) instrument. The metals and places of cultivated were classified with principal component analysis (PCA) and cluster analysis (CA) as classification techniques.

Keywords: Rheum, metal content, ICP-MS, PCA, CA

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EP-21 HISTOPATHOLOGICAL EFFECTS OF FONOFOS ON GILLS OF ZEBRAFISH (*Danio rerio*)

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Aim: Due to the many advantages, organophosphate pesticides are commonly used worldwide. However, it's been proved that these chemicals generally do not show target specificity and non-target vertebrate organisms are adversely affected by pesticide exposure. The aim of the present study was to examine the potential harmful effects of fonofos, an organophosphate insecticide, on the gill tissues of zebrafish.

Methodology: Adult zebrafish [five fish for each treatment and solvent control (0.1% DMSO) groups] were exposed to 1, 2 and 4 mg/L fonofos for 96 hr. Gill tissues were removed, fixed with Bouin's fluid and embedded in paraffin. 5 µm serial sections were stained with hematoxylin eosin, Gomori trichrome or periodic acid-Schiff. Histological alterations were investigated by light microscopy.

Results: Fonofos caused epithelial lifting, curling of secondary lamellae, desquamation, epithelial hyperplasia and lamellar fusion in the gills.

Conclusion: Gills showed distinct histopathological alterations through fonofos exposure. It's evident that fonofos is a threat for non-target organisms living in aquatic ecosystems.

Keywords: Fonofos, insecticide, gill, histopathology, zebrafish, *Danio rerio*

**EP-22 ACROLEIN-INDUCED HISTOPATHOLOGICAL ALTERATIONS IN THE LIVER OF
GOLDFISH, *Carassius auratus***

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Aim: The present study is aimed at examining the histopathological changes caused by an aquatic herbicide, acrolein, in the liver of *Carassius auratus*.

Methodology: Goldfish were exposed to 1, 5 and 25 µg/L acrolein for 96 hr. Liver tissues were removed, fixed with Bouin's fluid and embedded in paraffin wax. 5 µm serial sections were stained with hematoxylin eosin. Both control and treated groups were investigated by light microscopy.

Results: Acrolein exposure caused sinusoidal dilatation and congestion, hemorrhage, degeneration in the parenchyma, altered hepatocytes presented more eosinophilic cytoplasm, lymphoid cell infiltration, presence of melanomacrophagic centers and necrosis.

Conclusion: Acrolein caused destructive effects on the liver of goldfish. Liver is responsible for detoxification of xenobiotics and has many other metabolic functions. Such effects on the liver may lead to malfunctions and metabolic disorders in the organism. These results should pay attention to acrolein contamination and usage limits.

Keywords: Acrolein, herbicide, liver, histopathology, goldfish, *Carassius auratus*

EP-23 CO-EXPOSURE TO POLLEN ALLERGEN AND OZONE MEASUREMENTS OF BRONCHIAL RESPONSE DURING EXPOSURE IN A CLIMATE CHAMBER

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Background Co-exposure to air pollution and pollen has been suggested to have a “cocktail effect”, and a recent study pointed to ozone and pollen peaks coinciding. The objective of this study was to evaluate bronchoconstriction during inhalation challenge with allergen alone and co-exposure to ozone.

Method In a human exposure chamber, 36 pollen sensitised participants underwent inhalation challenges to grass or birch allergen and 120 ppb of ozone in a randomized cross-over study, resulting in 85 challenges. Dose-response profiles were modelled by a non-linear mixed regression model. This method has to the authors' knowledge not previously been applied.

Results We found no statistical significant effect of the co-exposure to ozone on the size of the modelled PD₂₀, or on the shape and magnitude of the dose-response profiles.

The model provided a good fit to the data, and this study illustrates a reliable new method to model dose-response-curves for allergen exposure.

**EP-24 POTENTIALLY HARMFUL PHYTOPLANKTON SPECIES IN THE EASTERN
MEDITERRANEAN, THEIR ENVIRONMENTAL AND HEALTH EFFECTS**

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Aim of Study

The aim of this study is to describe the potential phytoplankton species causing HAB (Harmful Algal Blooms) in the eastern Mediterranean coast of Turkey and, to evaluate the environmental and human health problems caused by HAB events.

Method

In this study, data compiled from different published sources including scientific reports and papers about phytoplankton communities and HAB events in the eastern Mediterranean coast of Turkey. Of these, potentially harmful species were examined. Then, the environmental and human health effects of harmful algal increases were discussed.

Results and Discussion

Marine coastal ecosystems are exposed to nutrient enrichment due to tourism, agricultural and industrial activities. Nutrient enrichments may cause eutrophication in coastal waters. Then, eutrophication may allow the bloom of harmful or toxic algal species. Recently, HAB events are one of the important problems of marine environments and cause aquatic life damage, deterioration of water quality and human health problems. Algal toxins may cause poisoning, diarrhea even death in humans.

Although the eastern Mediterranean waters are nutrient poor, occurrence of HAB in coastal areas has been increased in recent years. Many harmful phytoplankton species were recorded previous studies in the Mediterranean coast of Turkey. Most toxic HAB taxa in this region are *belong to the dinoflagellates*. However, harmful species of diatoms and cyanobacteria are also recorded, but their harmful species number are very low compared to dinoflagellates.

Conclusion

Pollution has increased in coastal waters of the Mediterranean Sea due to human activities in recent years and this process may result in blooms of harmful species. Thus, pollution load of coastal waters should be reduced and water quality of these environments must be observed regularly.

EP-25 ARE UV FILTERS (SUNSCREENS) THREATENING OR PROTECTING US?

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Personal care products (PCPs) have been the subject of increasing interest because of their wide use and potentially harmful effects on the environment. The increased awareness of the damaging effects of UV light from sunlight has led to increase in the use of UV filters. Among PCPs, UV filters have been increasingly used in sunscreens and cosmetics to protect human skin and hair. Currently less than 40 compounds are registered worldwide. These commonly used UV filters are ubiquitously detected, especially in water systems and even in human blood. In the last decade the EU authorities have recognized them as important organic contaminants of the aquatic environment.

This study is a review of the studies showing the harmful effects of UV filters on environment and living things. The released UV filters are not readily degradable and therefore can accumulate and impact the environment. The UV filters enter the aquatic ecosystem directly through water recreational activities when they are washed from the skin and/or clothes, or indirectly through wastewater from the use of personal care products, washing clothes, and industrial discharges. Concentration levels of ng/L are generally detected in surface water, groundwater, and seawater. Further, there is some concern over possible endocrine disrupting effects of UV filters and some works showed that UV filters were present in fish from a lake used for bathing. There are a lot of toxic effects of UV filter compounds, for example, they exhibit estrogenic activity and reproductive effects in fish, interferes with behaviour and the development of the reproductive organs and brain in rats, changes the transcription profile including the sex hormone system of fish.

EP-26 INVESTIGATIONS TOXIC EFFECTS OF MESOTRIONE ON *Galleria mellonella* L

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Many protocols for the elimination of pests that are harmful to the environment, economy, and health as well as those that could be used in agricultural activities have been developed based on the data obtained from the studies conducted to date. Chemical control is the most effective and preferred method against to pests. However, alternatives should be developed for restoring the natural balance that is disrupted as a result of excessive and unconscious use of synthetic chemicals in chemical control programs.

Mesotrione is a new herbicide being developed for pests. Mesotrione is an alternative herbicides among the triazine group which could be used instead of Atrazine. In recent years it has been used in agricultural products and many pests control.

Galleria mellonella L. serves as a good physiological model to understand the effects of toxic materials on living organisms in the nature. There has been a gradual increase in the use of the larvae of greater wax moths in studies conducted in many fields of science such as microbiology, immunology, molecular biology, genetics, and particularly physiology, biochemistry, and toxicology due to ease of breeding and no ethical concerns. It is likely that the larvae of greater wax moths will play important roles with respect to human health due to their antimicrobial peptide content

In this study, lipid the effects of different sublethal doses of Mesotrione (0.1 µg, 0.2 µg, 0.3 µg, 0.4 µg, 0.5 µg, 0.6 µg, 0.7 µg, 0.8 µg, 0.9 µg and 1 µg) was investigated about the induced oxidative stress on Lipid Peroxidation (MDA), superoxide dismutase (SOD) and catalase (CAT) activities with lipid, carbohydrate and total protein amounts in the model organism *Galleria mellonella*. Mesotrion treatment caused a decrease in protein, lipid and carbohydrate levels, while an increase in MDA levels with SOD and CAT enzyme activity were observed.

In conclusion, it has been determined that mesotrione increases the lipid peroxidation (MDA) level by the activity of antioxidant enzymes such as CAT and SOD, leading to oxidative stress.

Keywords: *Galleria mellonella*, Superoxide dismutase, Catalase, Mezotrion

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EP-27 AN ALTERNATIVE KIND: PANGASIUS HYPOPHTHALMUS

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Although there are national aquarium fish companies in Turkey, many species, including *Pangasius hypophthalmus*, are annually imported from South East Asian countries. Comparing the import and export rates of ornamental fish, it can be understood that exportation does not almost exist. Due to the high cost of the airway transportation and high losses during and after the importation of the pangasius fish as a result of the challenges in adaptation of the fish, currency losses related to the exportation should be preventing by ensuring suitable aquaculture conditions for this species in Turkey. Positive assets of the fish such as the ability to adapt to intensive cultivation, low feed input tolerance, ability to withstand poor water levels, large consumer, rapid growth advantage, better ability to utilize vegetable protein sources decrease the aquaculture costs of and increase the market share. This study offers information about the aquaculture processes of this species from tiddler to the market.

Keywords: Pangasius hypophthalmus, aquaculture, environment

**EP-28 DISTRIBUTION AND BIOLOGICAL PROPERTIES OF PRUSSIAN CARP WHICH IS THE
IMPORTANT INVASIVE SPECIES**

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The biological characteristics of the prussian carp which has attracted attention with its invasive nature in the world and our country recently and its distribution in Turkey have been reviewed. The biological characteristics of the prussian carp are; large ecological tolerance, reaching sexual maturity in a short time, high egg production and egg opening rate, multiple reproductive cycles which is 4-8 times during the year make it strong among in the invasive species. *Carassius gibelio* which is an omnivorous nutritional property, are easily distinguished from *Cyprinus carpio* by its brown color and head with no mustache, the final rays of anal and dorsal fins are threaded. This fish has been firstly reported to have entered the waters of the Western part of Thrace in Turkey. There are many records of the distribution of this species in the Turkey especially Sakarya and Samsun basins currently. There are some ways of distribution to inland water systems (Removal of Natural Barriers, Moving by ships, Fish releasing activities, Accidents in Fish Productios) therefore this ways should be blocked besides supporting the hunting. And the water resources in the other regions are also seriously threatened by the prussian carp invasion. It is thought that it would be beneficial to collect frequently encountered datas in the literature and the distributions of *Carassius gibelio* in Turkey.

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**EP-29 FOOD COMPOSITION OF LEVANTEN WATER FROG, *PELOPHYLAX BEDRIAGAE* IN
MEDITERRANEAN TURKEY**

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Aim: This study was carried out in order to determine the seasonal food composition which is important in terms of feeding characteristics to affect the growth and reproduction rates.

Materials and Methods: Nutrient content of 325 (65 juvenile, 148 male and 112 female) Levanten water frog, was obtained by stomach flushing method. Individuals were anesthetized with 1% MS-222 (methane tricaine sulfonate) solution and the nutrient content was obtained by using a pressurized water wash method. Mann-Whitney U test was used to calculate the differences of preys between the sexes and the seasons.

Results and Discussions: 1216 pieces (57869.15 mm³) of prey items between 1 - 74 mm in length belonging to different groups were detected in the stomach contents of specimens. In juveniles, 90% of the stomach content is constituted by species included in Insecta. Preys belonging to Hymenoptera (N% = 27), Hemiptera (22%), Coleoptera and Arachnida (18%), constitute the majority of the food content. In males, 74% of the food content is composed of Insecta. Among these hunting groups, Hymenoptera (19%), Hemiptera (15%), Coleoptera (15%) and Arachnida (10%) are the most consumed groups. In females, 79% of the food content is composed of Insecta. Diptera (20%), Coleoptera (15%), Hymenoptera (13%), Hemiptera (11%) and Arachnida (11%) are the most consumed hunting groups. In total, Hymenoptera (18%), Coleoptera (16%), Diptera (13%) and Arachnida (10%) are the most commonly consumed hunting groups.

In terms of volume, the frogs predominantly feed on Hemiptera (% V = 23), Orthoptera (16%) and Coleoptera (16%). The prey items detected in the stomach content are largely populated by the nocturnal species. Despite the fact that partial differences in seasonal food content are observed, these are not statistically significant (Kruskal-Wallis Test, $X^2=0,55$, $P\leq 0,458$).

Conclusion: As a result, the vast majority of the food content is forming species from the Insecta. In general, poorly flying or non-flying preys are more commonly found in food content. The food composition varies depending on the abundance of prey in the surrounding area.

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EP-30 CHIA (SALVIA HISPANICA): FUNCTIONAL FOOD AND HEALTH RELATION

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Since ancient ages, Chia (*Salvia hispanica*), was originated from Mexico and Guatemala; were used by Aztecs and Mayas people in the preparation of food, folk medicines. Chia seed is composed of high dietary fiber (18-30%), fats (30-33%), proteins (15-25%), carbohydrates (26-41%), ash (4-5%), vitamins, minerals, and dry matter (90-93%). Chia seed is an artificial source of omega-3 (α -linolenic acid), insoluble and soluble fibers and proteins, vitamins, minerals and natural antioxidants. Chia seed oil is reported to contain rich alpha-linolenic acid and antioxidant polyphenols. Also it contains heavy metals not exceeding the maximum metal levels for food safety. Chia can be considered as "functional food" since apart from contributing to human nutrition. At the same time, chia seed is a rich source of antioxidants with the presence of caffeic acid, chlorogenic acid, quercetin, myricetin, and kaempferol which are believed to have hepatic protective effects, cardiac, anti-ageing and anti-carcinogenic characteristics. It is also a big source of dietary fibre which is useful for the nutritive tract and controlling diabetes mellitus with higher concentration of beneficial unsaturated fatty acids, minerals, vitamin and phenolic compounds. Medicinal effects of chia in the control of diabetes, hypertension, dyslipidaemia, antidepressant, as an anti-inflammatory, antioxidant, anti-blood clotting, laxative, analgesic, antianxiety and immunity enhancer is scientifically set. Nowadays, chia seeds suggests a enormous potential in the industries of food, health, pharmaceuticals, animal feed and nutraceuticals, owing to its functional components.

INTERNATIONAL CONGRESS OF HEALTH AND ENVIRONMENT

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Adana-TURKEY

EP-31 EFFECTS OF ALKANNA TINCTORIA ON HUMAN HEALTH

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Alkanna tinctoria is a perennial herbaceous plant that grows in the Eastern Black Sea, Mediterranean and especially in the Central Anatolia region of our country and in the south of France, Britain, India and Albania in the World. It is used in medicine industry, in cosmetics and in plant rootstock plant painting. Its composition includes wax, tannin, resin, choline, coconut, alkanarot. The two most important compounds found in plant roots are alkannin and shikonin. These compounds are used as a food additive as well as in the cosmetic sector and in drug preparation. In the past, plants have been used to accelerate the healing of wounds, to relieve pain, and also to dye red, yarn dyes, foodstuffs and oils obtained from roots. In addition, studies on avocet plant species have shown activity for antiviral, antibacterial, anti-inflammatory activity and some anticancer species. However, the increased interest in natural ingredients in healthy eating habits today has caused the consumer to have a tendency to avoid chemical preservatives and additives. For this reason, it is thought that the properties of this plant, such as Alkanna tinctoria, which has been used either in the treatment of diseases or as an additive material in the past, should be investigated in more detail.

EP-32 BIOACTIVE COMPOUNDS OF SEAWEEDS AND THEIR POTENTIAL HEALTH BENEFITS

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Aim of Study: The aim of this study was to describe nutritional value and bioactive compounds of seaweed and to discuss their potential benefits for human health. It was also aimed to discuss and review possible uses of seaweeds.

Method: In this study, we reviewed literature recently published on biochemical composition and potential uses of seaweed products as food, pharmaceutical and medicinal *applications*.

Results and Discussion : Seaweeds are classified into three groups depending on pigment contents namely brown, red and green algae and serve as the primary producers in the marine environment. Seaweeds have been consumed as a traditional food particularly in the far east since ancient times.

Seaweeds have recently been subject to research interest on their contents. Preliminary studies have shown that phenolic compounds such as flavonoids, phenolic acids and polyphenols from seaweeds play an essential role in preventing diseases especially cancer-related diseases and treatments. Seaweeds are also known to be a rich source of vitamins, lipids and fatty acids. Bioactive compounds of seaweeds are considered to be responsible for their protective properties like anticarcinogenic, antimutagenic and anti-inflammatory effects. New developments in the field of medicine have provided positive consequences that bioactive constituents of seaweeds help to avoid obesity and cardiovascular diseases.

Although Turkey is surrounded by Black Sea, Mediterranean Sea, Marmara and Aegean seas, constituting 8.333 km coastline, seaweeds have not been intensively studied with regards to their bioactive compounds.

Conclusion : Seaweeds emerge as promising alternatives as bioactive compounds and food for human nutrition. Although current data on the health benefits of seaweeds are regarded as insufficient, research in this area are increasing. Further studies should be, therefore, done to better understand the effect mechanisms of chemical components and effective use of products in human health.

INTERNATIONAL CONGRESS OF HEALTH AND ENVIRONMENT

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Adana-TURKEY

EP-33 FOOD SAFETY, NUTRITION AND HEALTH

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It is the most basic right of the individual to be able to get enough and balanced amounts of food all over the world to live and to be healthy. In order to protect people's health, adequate nutrition is not enough, food taken must not be threatening human health.

Safe food; physical, chemical and microbiological properties of food consumption and food value is not lost. The issue of food safety has become an important topic due to the public health dimension. Due to the changes in food processing, production, distribution and consumption, consumers are not confident about the safety of the food they consume.

Despite the advances in food science and technology, foodborne diseases are seen in all countries and the trend of increasing microbial pathogens still continues. Chemical hazards are a specific food safety hazard. Inadvertent misuse of pesticides, especially in the agricultural production, has caused problems due to the presence of residues.

It appears that the use of food additives has been extensively used and nonhygienic practices are often used to deceive consumers with the thought of making profits commercially. Another issue is the adverse effects of biotechnology. Genetic changes are made to foodstuffs, thereby increasing food resources, and there is a great deal of disagreement in the world in terms of consumer health and environmental impact of produced foods .

It is necessary to introduce very strict sanctions to food establishments that provide food production and distribution, storage and food service to implement food safety systems effectively. In addition to this security system, education and information for consumers should be done in order to protect the health of the public. The basic rules that consumers apply to food selection, cooking, consumption, preservation and storage will be very effective in protecting community health.

**EP-34 THE INVESTIGATION OF ANTIFUNGAL EFFECTS OF FLOUR, OIL AND EXTRACT OF
GRAPE SEEDS AGAINST ON VARIOUS YEASTS**

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Grape seeds were evaluated as waste as until today, but it has begun to be used in different industries in recent years. Grape seed is generally obtained as wastes (25-30%) after processing wine, molasses, alcohol and grape juice. There are polyunsaturated fatty acids, phenolic compounds, fiber content in the grape seeds compound and therefore find application in cosmetics, medicines and the food industry. In addition, antimicrobial effects of grape seed have been determined and therefore studies are being carried out on the use of these in medicine and animal feeds. Grape seed has been used in various fields in the food industry in recent years as grape seed flour, grape seed oil, grape seed extract. In this study, antifungal effects of flour, oil and extract obtained from grape seeds against various yeasts were investigated by disk diffusion method.

EP-35 THE DETERMINATION OF ENRICHMENT FACTORS OF SOME HEAVY METALS IN THE SEDIMENTS OF NORTHWEST REGION OF KEBAN DAM LAKE (ELAZIG)

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Keban Dam Lake (Elazığ) is one of the most important water resource of Turkey and it is under the serious pollution caused mainly by urban, industrial and agricultural resources. In the present study, we aim to determine the levels of some heavy metals (Al, Fe, Zn, Cu, Cr, Co and Ni) and the pollution level by calculating Enrichment Factor (EF) values in the sediments of the northwest of the Keban Dam Lake (Elazığ). For this purpose, 5 cm-thick 50 subsurface samples in the northwestern region of Keban Dam Lake were recovered by using gravity corer. In this study, aluminium (Al), iron (Fe), zinc (Zn), copper (Cu), chromium (Cr), cobalt (Co) and nickel (Ni) concentrations were determined by ICP-MS analyses. The ranges of elements were found as Al=39400-149600 ppm, Fe=17400-70900 ppm, Zn=35.00-86.00 ppm, Cu=16.60-38.30 ppm, Cr=70-1520 ppm, Co= 8.30-26.80 ppm, Ni=63.00-294.00 ppm, respectively. The EF values of these elements were determined as Fe= 0.60-1.08, Zn=0.27-0.87, Cu=0.27-0.87, Cr=1.21-18.69, Co=0.50-1.47 and Ni=0.71-4.50 respectively. According to the EF values, the northwestern region of the Keban Dam Lake are highly polluted in term of Cr (EF=10-25), medium polluted in term of Ni (EF=3-5) and not polluted in term of Fe, Co, Cu and Zn (EF<1). According to this classification, it can be concluded that there are an anthropogenic entrances in regions with high Cr and Ni values.

Key words: Heavy Metal Accumulation, Gravity Core, Enrichment Factor, Keban Dam Lake.

Acknowledgement: This study is financially supported by TÜBİTAK Research Fund (Project no: 114Y091).

**EP-36 THE DETERMINING OF MICROBIOLOGICAL CONTAMINATION LEVEL OF VAN LAKE
AND ERÇEK LAKE in THE BOUNDARIES OF VAN**

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Van Lake is located in provinces of Van and Bitlis. It is the biggest saline soda lake and the 4th biggest closed basin in the world. Erçek Lake is a tectonic lake, located east of Van Lake and it is a saline soda lake like Van Lake. 500 000 people live around the Van Lake and Erçek Lake. Both lakes are contaminated everincreasingly. In this study, we aimed to investigate the existence of microbiologic contamination and its ratio in Van Lake and Erçek Lake. Between May 2015 and September 2015, we took a total of 232 water specimens from 29 predetermined spots in both lakes. We investigated fecal coliform, total coliform, and fecal streptococcus in these specimens. Specimens contained in 300-500 ml plastic bottle with thiosulfate are analyzed in Van Public Health Laboratory. Water specimens that arrived at the laboratory are filtered with 0.45 µm pore diameter membrane filters and existing bacteria are collected on the filter. After filter placed in a suitable medium, it is incubated at optimum temperature. Then, we counted the formed colonies on the membrane surface. Specimens that have less than 1000 CFU/ml for fecal streptococcus, 2000 CFU/ml for fecal coliform, and 10 000 CFU/ml total coliform are accepted as good quality specimen. 66 of 232 water specimen(% 28) had no bacterial growth, whereas 166(%72) had different numbers of total coliform, fecal coliform, and fecal streptococcus. 36 of the 166 water specimens which bacterial growth, were above the limits of good quality for total coliform, fecal coliform, and fecal streptococcus and evaluated as bad quality. According to bathing water quality regulation parameters, Fidanlık, Kampüs, MTA, and İskele coasts were bad quality. Ünseli, Akdamar Island, Grand Deniz, DSI, Kızılay Camp, İşkirt, Şahin hill, Directorate General of Highways, District Governorship, Police Camp, Yeşilsu, Çolpan, Ağartı and Çakırbey coasts were good quality. Van's touristic development will bring economic, cultural, and social development in its wake. Because of this, it is possible to transform Van into a livable tourism city with the projects in the basin borders.

EP-37 ADSORPTION COMPETENCE STUDY OF SOYBEAN WASTES REGARDING REMOVAL OF CR (VI) FROM WASTE WATERS

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The benefits of using soybean wastes for wastewater treatment include easy technique, needs modest processing, superior adsorption ability, selective adsorption of heavy metal ions, economical process, easy availability and easy regeneration. Present study is based on the scope of utilization of industrial wastes in minimization of effluent pollution caused in our ecosystem. Unlike most other toxic pollutants, metals can accumulate throughout the foodchain due to their non-biodegradability and thus have potentially detrimental effects on all living species. Once they enter into the food chain, large concentrations of heavy metal ions may accumulate in the human body. If the metal ions are ingested beyond the permitted concentration, they can cause serious health disorders.

Table 1: The MCL standards for the most hazardous heavy metals [5].

Heavy metal	Toxicity	MCL (mg/L)
Chromium (Cr)	Headache, diarrhea, nausea, vomiting, carcinogenic	0.05
Copper (Cu)	Liver damage, Wilson disease, Insomnia	0.25
Nickel (Ni)	Dermatitis, nausea, chronic asthma, coughing, human carcinogen	0.20
Zinc (Zn)	Depression, lethargy, neurological signs and increased thirst	0.80
Lead (Pb)	Damage the fetal brain, diseases of kidney, circulatory system and nervous system	0.006

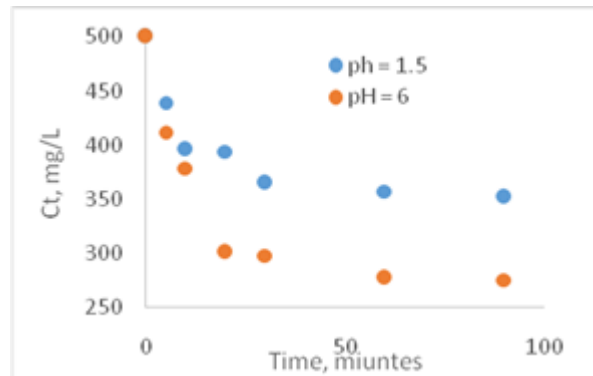


Fig. 1 Integral kinetic curves for Cr (VI) retention on soybean wastes at the temperature 25°C, pH = 6 and 1.5

It was investigated for its adsorption competency for chromium adsorption from aqueous solutions. The sorption capacity of soybean wastes was examined as a function of pH and adsorbent concentration. The biosorption process was very fast; 58.65% of Cr (VI) removal occurred and maximum removal obtained at pH =6. The surface characteristics of soybean wastes have been discussed using SEM, FTIR and XRD. The results indicate that carbon soybean wastes be employed as a eco-friendly low cost alternative to commercial adsorbents in the removal of Cr(VI) from water and wastewater.

**EP-38 COD REDUCTION OF WASTEWATER CONTAINING AMPICILLIN USING CRT GLASS
WASTE AS PHOTOCATALYTIC SUBSTRATE FOR TiO₂**

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Cathode ray tube glass was used to create, by sintering, a functionalized substrate for TiO₂. Samples were made using various concentrations of TiO₂ on the glass surface and they were subjected to photo-oxidative degradation process performed in a photocatalytic reactor with continuous circulation. The experimental studies considered the advanced degradation of organic compounds (ampicillin) from wastewater, bearing in mind to achieve the lowest concentration of TiO₂ that ensure the highest COD reduction.

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EP-39 REMOVAL OF 2,4-DCP FROM WASTEWATER

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This work presents a new possibility for the removal of the slowly biodegradable compounds from wastewater using an innovative membrane manufactured from EPDM (ethylene propylene diene monomer). The tests about the environmental application of this innovative membrane which refer to the removal of toxic compounds from wastewater were performed with synthetic solutions of 2,4-DCP. All the tests demonstrate the excellent resistance of the membrane in repetitive cycles, in an oxidative reaction medium. In terms of the efficiency in removing the organic compound from wastewater, the oxidation degree was 78%.

Keywords: EPDM; titanium dioxide; immobilization; hybrid membrane; 2,4-dichlorophenol

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EP-40 AFFORESTATION/REFFORESTATION, A SIMPLY AND CHEAP WAY TO REDUCE THE EFFECT OF CLIMATE CHANGE

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Climate change is caused by changes in Earth's energy balance. Global warming and climate change concerns have led to global efforts for reducing the concentration of atmospheric carbon dioxide. This work presents a comparative study of main Negative Emissions Technologies in terms of technical-economic impacts. The originality of the paper is the study of the variation of amount of carbon dioxide that is stored in trees according to age and species, based on the data identified in the literature. Also a case study that has been carried out for Romania which highlighted a strategy for excess CO₂ storage in forests, the CO₂ reduction efficiency degree for two annual forestation/afforestation rate.

Keywords: climate change, carbon dioxide storage, Negative Emissions Technologies, forestation/afforestation

**EP-41 SYNTHESIS AND CHARACTERIZATION OF CELLULOSE ACETATE-HYDROXYAPATITE
MICRO AND NANO COMPOSITES MEMBRANES FOR WATER PURIFICATION AND
BIOMEDICAL APPLICATIONS**

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A relatively new and little studied field is that of membranes for osseointegration - polymeric membranes which favor welding metal implants, or grafts to bones, especially membranes used for dentistry. Any polymer, which has the ability to form a solution, can be used in the preparation of membranes, either by solvent evaporation, or by precipitation with a suitable nonsolvent. In this work, is reported a facile synthesis and characterization of new cellulose acetate-hydroxyapatite membranes for water purification and biomedical applications. The morphological and structural characterization of the synthesized membranes was carried out using SEM, EDS and FT-IR. Thermal characterization (TGA & DTG) and water flows analysis of the synthesized membranes was also conducted.

**EP-42 INOCULATED MOUSE MAMMARY CARCINOMAS RELEASE EXTRACELLULAR
VESICLES**

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Extracellular vesicles (EVs) contain receptor proteins, proteolytic enzymes, miRNAs, and mRNAs which are transferred into the target cells, and then affect various cell functions. Here, we show by electron microscopy that inoculated mouse mammary carcinomas secrete EVs.

**EP-43 ULTRASTRUCTURAL FEATURES OF ENHANCED MITOPHAGY IN LIVER AND TESTES
OF ETHANOL-TREATED RATS**

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Excessive alcohol consumption induces mitochondrial damage in almost all body organs. Mitophagy is a prosurvival mechanism for selective clearance of damaged mitochondria. Here we used animal model to investigate the mitophagic response of hepatocytes and Sertoli cells to ethanol toxicity using transmission electron microscopy.

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EP-44 LOW-COST SENSORS FOR AIR QUALITY ASSESMENT

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A LOT OF OPPORTUNITIES

The possibilities with low-cost sensors are plenty and the development is accelerating. Their little size and low price enables monitoring, which is much more complicated and expensive with advanced research instruments. However, low-cost sensors can not at the moment provide the same sensitivity, stability, accuracy and precision as advanced instruments, but they can serve as a valuable supplement.

PROPERTIES AND TECHNICS

Low-cost sensors are often based on electrochemical sensors or metal oxide semi-conductors (MOS) for gas measurements, while lasers are used for particle sensors. Electrochemical sensors measure the current of redox reactions, proportional to the present gas concentration in the air. MOS sensors measure the resistance changes during gas oxidation reactions at the metal oxide surface. Particle sensors are based on optical detection; counting the number of particles in the air by measuring light scattering.

PRELIMINARY RESULTS

Preliminary results of four NO₂ and O₃ electrochemical sensors from Alpha-sense along a trafficked street in Copenhagen, DK, agreed fairly well with reference data. However, calibration before and after measurements turned out to be important due to long term drift. Testing of PM sensors is on going and the first results. Further comparison with reference data is required.

**EP-45 THE EFFECT OF DIAZINON, AN ORGANOPHOSPHOROUS PESTICIDE, ON
PHOSPHOLIPID FRACTION IN THE LIVER OF OREOCHROMIS NILOTICUS**

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Introduction: Diazinon is an organophosphate (OP) insecticide. Studies have shown that this pesticide is highly toxic to fish. Diazinon's 96 hour LC50 value was reported between 0.8 mg / L (*Poecilia reticulata*) and 8 mg / L (*Brachydanio rerio*) in different fish species. The LC50 value for diazinon *Oreochromis niloticus* was found to be 2.8 mg / L. According to this value Diazinon is quite toxic to *O. niloticus*. *O. niloticus* is used as indicator organisms to study the biological effects of pollutants in the aquatic environment. In fish, the liver is the main organ for the biotransformation of organic pollutants and the excretion of harmful metals. In addition, lipid components are very susceptible to stress factors and environmental changes. Therefore, in the present study, it was aimed to determine the changes that can occur in the fatty acids in the phospholipid fraction of the liver tissue of *O. niloticus* exposed to the sublethal concentration of diazinon.

Materials and Methods: The fish were provided from the pools of the Faculty of Fisheries of Çukurova University. Test groups were designated as diazinon exposure, acetone control and control groups. The diazinon concentration was prepared by dissolving in acetone and taking into account one-tenth of the LC50 values (0.28 mg/L diazinon). In order to determine the changes that would occur in fatty acids, three fish were removed at the end of the 7th, 14th and 21st days of each of the experimental groups. Liver tissues from the sacrificed fish were homogenized in chloroform / methanol (2: 1, v / v) solution. After the phospholipid fractions were obtained by thin layer chromatography (TLC), the fatty acids in the phospholipids were converted to fatty acid methyl esters. A gas chromatograph with an FID detector was used for the analysis of fatty acid methyl esters.

Results and discussion: The most important fatty acids in the phospholipids (PL) in the liver tissue of the control fish were C16: 0, C18: 0, C18: 1, C18: 2n-6, C20: 4n-6 and C22: 6n-3. On days 7, 14 and 21, irregular increases and decreases were recorded. The results were statistically meaningful at P <0.05 level. In this study, the toxicity of diazinon on the liver phospholipid fatty acids of the *Oreochromis niloticus* was shown. In fresh water, even in small concentrations, the presence of diazinon may cause harmful effects on fish physiology and potentially impair survival in the natural environment. Therefore, control measures should be taken to prevent possible contamination of the water environment by such toxic pest insecticide.

Thank: This study is supported by the Dicle University Scientific Research Projects (16-EZF-001).

**EP-46 ANTIMICROBIAL AND ANTIOXIDANT ACTIVITY OF NEWLY SYNTHESIZED
Dichloro [N,N-Bis(diphenylphosphino)-3,5-dimethoxyaniline]Pd(II) COMPLEX**

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Aim: Antimicrobial resistance is a globally increasing serious threat. New compounds are synthesized in order to prevent resistance and control the spread of microorganisms. In the literature, newly synthesized Palladium complexes have been reported to have antibacterial activity and even high activity to compete with strong antibiotics. In this study, antimicrobial and antioxidant activities of the newly synthesized Dichloro[N,N-Bis(diphenylphosphino)-3,5-dimethoxyaniline]Pd(II) complex were investigated.

Method: The test compound used in this study was synthesized by Prof.Dr. Nermin BİRİCİK. Experimental groups were performed at concentrations of 120, 250, 400, 800, 1600 and 2000 µg/ml and positive controls.

Erythromycin, Imipenem and Cefuroxime sodium antibiotic discs were used as positive controls in the antimicrobial activity test. The activity against pathogenic microorganisms (*E. coli*, *P. aeruginosa*, *S. aureus*, *S. pyogenes*, *C. albicans*) was evaluated by measuring diameters of clear zone.

AA, BHA and BHT were used as positive controls in the antioxidant activity assay. Activity was carried out spectrophotometrically via DPPH free radical scavenging activity.

Results: Antimicrobial activity result showed that the test compound has weak activity against microorganisms. Small changes were observed depending on dose increase. Antioxidant activity showed an increased activity due to dose increase.

Discussion and Conclusion: Although the test compound showed weak antimicrobial activity, the use of different microorganisms is important as it provides information about the effect of the test compound on different microorganisms. But the mechanism of action of test compounds is unknown. On the other hand, having antioxidant activity suggests that it can be used in areas such as food and cosmetics. Therefore, it is foreseen that animal studies should also be tested after different studies are done.

**EP-47 THE EFFECT OF OCCUPATIONAL AND PERSONAL RISK FACTORS ON TARSAL
TUNNEL SYNDROME**

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Tarsal tunnel syndrome characterises a complex of symptoms that result from compression of the posterior tibial nerve as it passes through the fibro-osseous tunnel located beneath the flexor retinaculum on the medial aspect of the ankle. The syndrome has been described in several case reports and review articles since Keck's and Lam's original case reports in 1962. Whereas other nerve entrapment syndromes are known to be caused by activities including repetitive motion of the hands and feet and are frequently occupational, no similar relation has been described for the tarsal tunnel syndrome. Lam looked for common risk factors among a series of ten patients with tarsal tunnel syndrome but found that none shared a common occupation.

Tarsal tunnel syndrome has been described in about equal numbers in men and women ranging in age from the teens to the mid-70s. The risk factors for tarsal tunnel syndrome are largely unknown. Suggestions for the pathophysiology of the syndrome include: (a) traction on the neurovascular bundle via fibrous septa from the flexor retinaculum which actually attach to the bundle; (b) the high degree of vascularity of the tarsal tunnel rendering it more susceptible to the effects of local vascular injury; and (c) local disease. The latter pathological changes have been well described for carpal tunnel syndrome and may be caused by the repetitive trauma occurring in many occupations. To date there has been insufficient evidence for such a relation between occupation and tarsal tunnel syndrome.

EP-48 POLYPLOIDY INFLUENCES PLANT-ENVIRONMENT INTERACTIONS IN QUAKING

ASPEN

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BACKGROUND

Prenatal exposure to lead (Pb) has been shown to have negative and irreversible health impacts on foetal and early childhood development, affecting morbidity and mortality in adulthood. This study aimed to assess in utero Pb exposure, examine birth outcomes, and identify confounding factors in the large cohort of South African population, following the legislated removal of Pb from petrol.

METHODS

Lead was measured in the maternal blood, urine and cord blood using Inductive Coupled Plasma Mass spectrometry (ICP-MS). The statistical analyses included Spearman's correlation, Wilcoxon rank sum (Mann Whitney), Kruskal-Wallis rank tests and multivariate linear regression

RESULTS

Overall, the geometric mean (GM) of Pb in maternal blood (PbB) was 1.32 µg/dL (n = 640; 95% CI, 1.24-1.40). In the subset cohort, the GM of paired maternal PbB and cord blood (PbC) was 1.73 µg/dL (n = 350; 95% CI, 1.60-1.86) and 1.26 µg/dL (n = 317; 95% CI, 1.18-1.35), respectively with a positive correlation between the log PbB and the log PbC ($\rho = 0.65$, $p = <0.001$).

CONCLUSIONS

This study has demonstrated not only the positive impact that the introduction of unleaded petrol and lead-free paint has had on in utero exposure to Pb in South Africa, but has also contributed new data on the topic, in a region where such data and scientific investigations in this field are lacking. Future research should evaluate if similar effects can be detected in young children and the adult population.

KEYWORDS: Birthweight; head circumference; lead; low birthweight; pregnancy; preterm

**EP-49 SCEPTICISM AND DISINTEREST IN CLIMATE CHANGE: A PERSPECTIVE FROM
TURKISH MIDDLE SCHOOL STUDENTS AT A RURAL AREA**

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Some signals recently documented has shown that climate change is a vital threat to the planet. For instance, our health and wellbeing has been severely affected since floods and droughts become more frequent and intense, and heat waves are now much more deadly. Furthermore, climate change is a threat since species have evolved to live within certain temperature ranges, and when our planet exceeded these temperatures, a species cannot adapt to the new temperatures, or when the other species it depends on to live cannot adapt. The most vulnerable people are the poor, the elderly, and children who are at risk for adverse effects from climate change. In initiations by governmental and non-governmental organizations has invited all individuals to take some responsibility in climate change mitigation and adaptation. Although we have to take every precaution to hinder the effects of climate change, there are some findings reflecting public beliefs in their uncertainty regarding anthropogenic climate change. At this point, climate change education has been viewed as a driver force for mitigation and adaptation process. In this aspect, the present study aimed to examine Turkish middle school students's sceptical beliefs and disinterest in climate change in terms of sociodemographic variables. The data were collected by administration of an instrument developed by Whitmarsh (2005) and adapted into Turkish by Higde and Oztekin (2013). The sample consisted of 639 eighth and seventh grade students (53% girls, 47% boys) living at a rural area in Turkey. It was found out that boys were more sceptical about the reality of climate change and were seemed to be more disinterested in climate change. Thus, this study implied that implementations of recently revised middle school science education program (MoNE, 2017) should play significant role in fostering these beliefs while considering the gender difference.

Keywords: climate change, gender difference, middle school students

EP-50 AIRBORNE ALTERNARIA SPP. IN VIBORG AND COPENHAGEN 2012-2015. DENMARK

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Purpose: Compare atmospheric load of *Alternaria* spores in the rural area of Denmark (Viborg) with the one in the urban area (Copenhagen), hypothesising that the concentration of fungal spores is higher in the Western part of Denmark, i.e. in Viborg, due to the higher density of agricultural land cover.

Method: the data were obtained for both stations for years 2012-2015 using 7-day volumetric spores' samplers of the Hirst design. Microscope slides from the traps were examined by use of light microscopy at the genus level under 640x magnification on 12 vertical lines, with a time resolution of 2 hours.

Findings: Daily spore concentration averages were significantly positively correlated between the stations, positively with temperature and negatively with relative humidity and precipitation. The highest release of spores for both stations was in 2014 and the lowest in 2012. Among 4 years, only in 2012 the yearly sum of daily averages, and number of days with exceedance of 100 spores m⁻³ threshold was lower in Viborg, compared to Copenhagen. During the most intensive release periods (between middle of July and the beginning of September) for 3 years of data (2013-2015), spore concentrations were significantly higher in Viborg, than in Copenhagen.

Discussion: Several studies found association between increase in daily *Alternaria* air concentration and asthma hospital admissions and visits. *Alternaria* concentrations were associated with maturation and harvesting of crops^{1,2} with arable fields as the main source of spores^{3,4}. Present results support previous findings and indicate higher exposure to fungal spores in the areas surrounded by arable lands in Denmark.

Conclusions: Monitoring of *Alternaria* air concentrations solely at the Copenhagen station can underestimate the concentrations of spores in the Western part of Denmark, suggesting additional monitoring in Viborg which can provide more accurate information relevant for the sensitized to moulds people.

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