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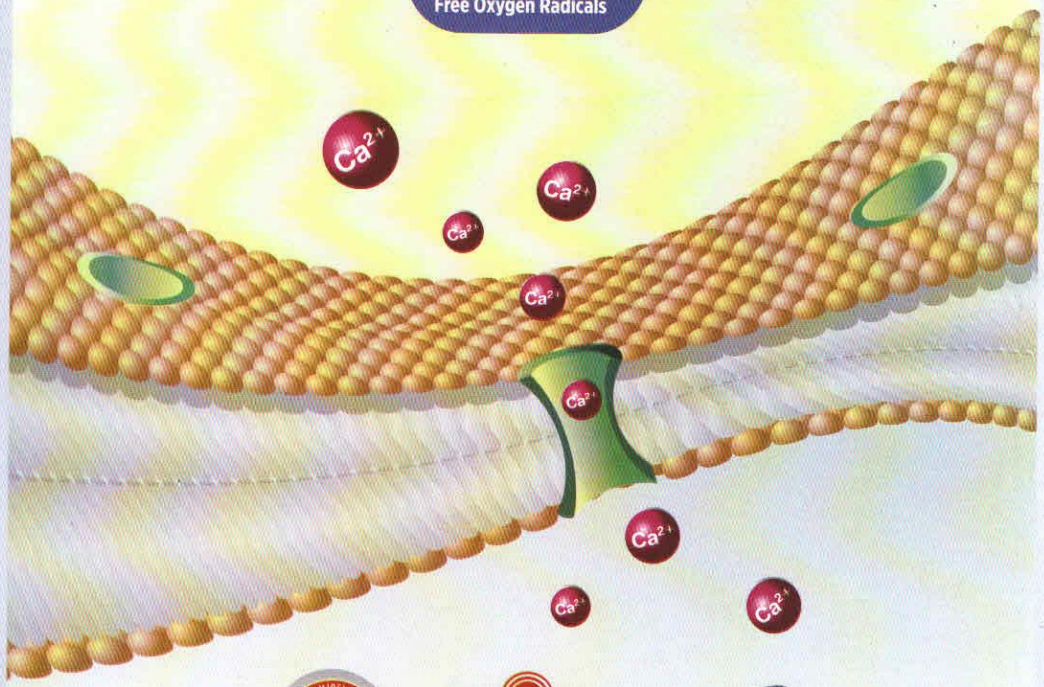

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Volume 4, Number 1, 2012

4th International Congress on Cell Membranes and Oxidative Stress: Focus on Calcium Signaling and TRP Channels

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AIM AND SCOPES

Cell Membranes and Free Radical Research is a print and online journal that publishes original research articles, reviews and short reviews on the molecular basis of biophysical, physiological and pharmacological processes that regulate cellular function, and the control or alteration of these processes by the action of receptors, neurotransmitters, second messengers, cation, anions, drugs or disease.

Areas of particular interest are four topics. They are;

A- Ion Channels (Na^+ - K^+ Channels, Cl^- channels, Ca^{2+} channels, ADP-Ribose and metabolism of NAD^+, Patch-Clamp applications)

B- Oxidative Stress (Antioxidant vitamins, antioxidant enzymes, metabolism of nitric oxide, oxidative stress, biophysics, biochemistry and physiology of free oxygen radicals

C- Interaction Between Oxidative Stress and Ion Channels (Effects of the oxidative stress on the activation of the voltage sensitive cation channels, effect of ADP-Ribose and NAD^+ on activation of the cation channels which are sensitive to voltage, effect of the oxidative stress on activation of the TRP channels)

D- Gene and Oxidative Stress (Gene abnormalities. Interaction between gene and free radicals. Gene anomalies and iron. Role of radiation and cancer on gene polymorphism)

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Keywords

Ion channels, cell biochemistry, biophysics, calcium signaling, cellular function, cellular physiology, metabolism, apoptosis, lipid peroxidation, nitric oxide synthase, ageing, antioxidants, neuropathy.

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Abstract Book

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Suleyman Demirel University Medical Faculty Department of Biophysics

medicine. Especially this kind of study has become a very important field in the development of DNA molecule probes and chemotherapeutics in recent years (1). In the study, the interactions of complexes with DNA in the absence or presence of H_2O_2 as were electrophoretically investigated.

To test cleavage of pBR 322 DNA by agarose gel electrophoresis experiments, supercoiled pBR322 DNA was treated with complexes. After incubation at 37oC for 2h, the mixed solution was loaded on 1% agarose gel. Gel was photographed under UV light. The efficiency of the DNA cleavage was measured by determining the ability of the complex to form linked circular or nicked circular DNA from its supercoiled form.

we found that complexes can cleave supercoiled pBR322 DNA to linear DNA (form III) compared with the control. In the presence of H_2O_2 (lanes 1, 2 and 4), the complexes resulted in formation of more intense circular supercoiled DNA (form I) and a new form. Also, the circular supercoiled DNA (form II) band was found to disappear completely while linear DNA (form III) band apparently increases for lanes 4, 7 and 8. These results are similar to that observed for some Cu (II) and Co(II) complexes used as chemical nucleases (2). In conclusion, the pBR 322 DNA treated with the complexes showed important changes in the form levels. Our findings indicate that the examined complexes induce conformational changes on supercoiled DNA. Further studies are underway to clarify the cleavage mechanism.

References

1. Dede B, Özmen I, Karipcin F, Cengiz M, 2009. Homo- and Heteropolynuclear Copper(II) Complexes Containing a New Diimine-Dioxime ligand and 1,10-phenanthroline: Synthesis, Characterization, Solvent-extraction Studies, Catalase-like Functions and DNA Cleavage Abilities. Appl. Organometal. Chem, 23(12): 512-519.
2. Lu LP, Zhu ML, Yang P, 2003.C rystal structure and nuclease activity of mono(1,10-phenanthroline) copper complex. Journal of Inorganic Biochemistry 95:31-36.

Poster No. 100

The effect of different doses of some cryoprotectans on post-thawed Angora goat sperm motility, plasma membrane integrity, oxidative stress parameters and DNA damage

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This study was conducted to determine the effects of glycerol, ethylene glycol (EG) and dimethylsulphoxide (DMSO) on sperm motility, plasma membrane integrity, oxidative stress parameters and comet test. Ejaculates collected from 5 Angora goats were evaluated and pooled at 37°C. Semen samples, which were diluted with a Tris base extender containing the 3 differents cryoprotectans (glycerol, EG and DMSO) and 2 doses 3% or 6%, were cooled to 5OC and frozen at a programmed rate of 3°C /min from +4 to -10°C; 40°C/min from -10 to -100°C; 20°C/min from -100 to -140°C in a digital freezing machine. Frozen straws were thawed individually at 37°C for 30 s in a water bath for subjective and CASA motility and, HOS test evaluation. Biochemical assays were performed in a spectrophotometer and GPx for Gpx-340TM Oxis research kit, GSH for GSH Oxis research-420TM kit, Catalase for CAT520TM Oxis research kit and antioxidant capasity for Sigma-Aldrich Antioxidant assay CS 0790 kit were used. DNA damage analysis was performed by Comet Image Analysis (COMET III) programme. The freezing extender supplemented with 6% glycerol led to higher percentage of subjective and computer assisted semen analyzer (CASA) sperm motility (58.8±2.3% and 36.9±4.6%, respectively) when compared to the others espacially DMSO groups ($P<0.001$ and $P<0.01$, respectively). However, EG 6% dose (56.0±2.8%) gave rise to higher percentages of membrane integrity assessed by HOST than those of the other groups ($P<0.001$). The extender supplemented with 6% and 3% glycerol led to higher GSH (mU/ml-10^9 cell/ml) and CAT (mU/ml-10^9 cell/ml) values than other groups (37.2±4.0 and 23.4±5.1, respectively). However, the cryoprotectans did not show any effectiveness on the maintenance of GPx, GSH, CAT and total antioxidant activities, when compared to the others ($P>0.05$). DNA damage was measured for tail length (μm), tail intensity (%) and tail movement by COMET test, which gave the lowest value for EG 3% 88.0±11.8, for glycerol 6% 16.3±2.7 and 9.4±2.2, respectively. While all groups of cryoprotectans did not affect the DNA damage significantly ($P>0.05$). Our results indicate that when DMSO was used as a cryoprotectant, sperm motility and plasma membrane integrity were supressed.

References

1. Pürhan Barbaros Tuncer, Serpil Sanözkan, Mustafa Numan Bucak, Pınar Alkım Ulutas, Pınar Peker Akalın, Serhat Büyükleblebici, Fazile Cantürk. Effect of glutamine and sugars after bull spermatozoa cryopreservation. Theriogenology, 2011; 75: 1459-1465.
2. Pürhan Barbaros Tuncer, Mustafa Numan Bucak, Serpil Sanözkan, Fatih Sakin, Deniz Yeni, İbrahim Hakkı Ciğerci, Ahmet Ateşşahin, Fatih Avdatek, Mustafa Gündoğan. The effect of raffinose and methionine on frozen/thawed Angora buck (Capra hircus ancyrensis) semen quality, lipid peroxidation and antioxidant enzyme activities. Cryobiology, 2010; 61: 89-93.
3. Mustafa Numan Bucak, Pürhan Barbaros Tuncer, Serpil Sanözkan, Pınar Alkım Ulutaş, Kenan Çoyan, Nuri Başpınar, Birol Özkalp. Effects of hypotaurine, cysteamine and aminoacids solution on post-thaw microscopic and oxidative stress patameters of Angora goat semen. Research in Veterinary Science, 2009; 87: 468-472.

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Poster No. 101

Effects of inactivated parapoxvirus ovis/zylexis® in equine polymorphonuclear leukocytes

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Inactivated parapoxvirus ovis (iPPVO)/Zylexis® shows strong immunomodulatory activities in several species and is used in veterinary medicine as an immunostimulatory biological for the prevention and/or treatment of infectious diseases (1). There is limited researches on the immunomodulatory activity of inactivated parapoxvirus ovis (iPPVO)/ Zylexis® in horses. It was recently shown that İPPVO/Zylexis® effectively stimulates canine blood phagocytes by Schütze et al (1) In this study, it is aimed to research the effect of iPPVO/Zylexis® on polymorphonuclear leukocytes (PMNL) functions (phagocytosis and intracellular killing activity) and myeloperoxidase (MPO) level of PMNLs in horses. With this aim, 24 healthy horses with an average age of 11 years were included in the study. 10 ml venous blood samples were taken before and after administration of iPPVO/Zylexis® three times a week. PMNLs ($1x10^7$ cell/ml) were isolated by ficoll-hypaque gradient centrifugation method from venous blood with EDTA (0,1g/ml). Pre and after administration of iPPVO/Zylexis ®, phagocytosis and intracellular killing activity were assayed by modifying Alexander's method and MPO level of PMNLs were assayed by modifying O-diasinidin method (2,3). As a result, administration of iPPVO/ Zylexis ® significantly increased the phagocytic and intracellular killing activities and level of MPO of PMNLs from equine.(p=0.0058,p=0.0050,paired t test; p=0.0070,student t testi). Prominence of the correlation between amount of MPO and functions of PMNL was shown in this study. It was concluded that iPPVO/Zylexis ® administration on horses had a supportive effect on cellular immunity and immunomodulatory effect on equine viral infections.

References

1. Schütze N, Raue R, Büttner M, Alber G. 2009. Inactivated parapoxvirus ovis activates canine blood phagocytes and T lymphocytes. Vet Microbiol.,12;137(3-4):260-7.
2. Alexander JW, Windhorst DB, Good RA. 1968.Improved tests for the evaluation of neutrophil function in human disease. J. Lab. Clin. Med.,72(1):136-48.
3. Hartert M, Bourgeois E, Grulke S, Dupont G,Caudron I, Deby C, Lamy M and Didier S.1998.Purification of Myeloperoxidase from Equine Polymorphonuclear Leucocytes.Can..J.Ver. Res.,62:127-132..

Poster No. 102

The relationship between the inhibition of Glutathione S-conjugate transport and oxidative damage in K562 cells

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Reactive oxygen species (ROS) damage all molecules especially on DNA molecule. It is known that, most oxidants produce ROS therefore aggravate DNA damage (1). Mainly, induced cellular DNA damage by hydrogen peroxide, which is an effective exogen agent, clearly understood (2). Also we know that, elimination of the products of xenobiotic metabolism is an important step in cellular detoxification and involves a specific