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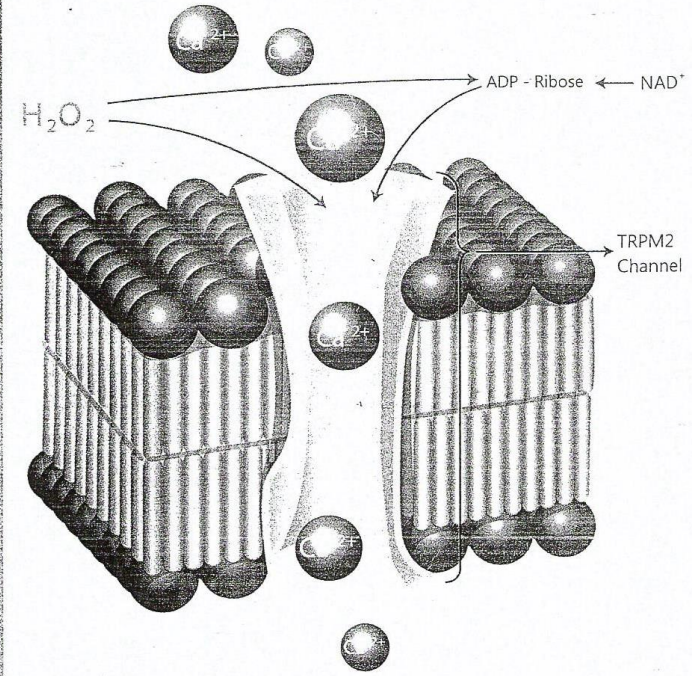

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Abstract Book of 3rd International Congress on Cell Membranes and Oxidative Stress: Focus on Calcium Signaling and TRP Channels 22-27 June 2010 Isparta, Turkey

by

Süleyman Demirel University Medical Faculty Department of Biophysics

Cell Membranes and Free Radical Research

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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, the biophysics of the radicals which springed up from oxygen),

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)

READERSHIP

Biophysics
Biochemistry
Biology
Biomedical Engineering
Pharmacology
Physiology
Genetics
Cardiology
Neurology
Oncology
Psychiatry
Neuroscience

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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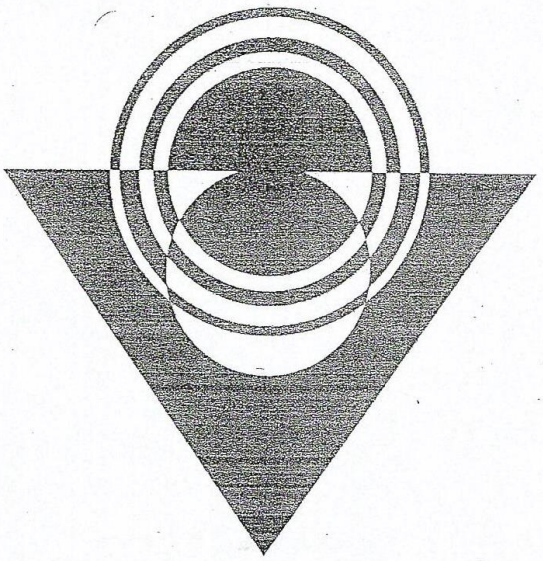

TÜBİTAK

3rd International Congress on Cell Membranes and Oxidative Stress: Focus on Calcium Signaling and TRP Channels was supported by The Scientific and Technological Research Council of Turkey.

The Abstract book of the congress is published in this issue.

Oral Presentation 9

The influence of cysteine and taurine on microscopic–oxidative stress parameters and fertilizing ability of bull semen following cryopreservation

Serpil Sarıözkan[1], M.N. Bucak[2], P.B. Tuncer[2], P.A. Ulutaş[3], A. Bilgen[2]

[1]Hakan Çetinsaya Experimental and Clinical Research Center, Faculty of Medicine, University of Erciyes, Kayseri, Turkey

[2]Ministry of Agriculture and Rural Affairs, Lalahan Livestock Central Research Institute, Ankara, Turkey

[3]Department of Biochemistry, Faculty of Veterinary Medicine, University of Adnan Menderes, Aydın, Turkey

Oxidative stress significantly damages sperm functions such as motility, functional integrity, endogenous antioxidant enzyme activities and fertility due to lipid peroxidation induced by reactive oxygen species (ROS). The aim of this study was to determine the effects of antioxidants such as taurine and cysteine in Bioxcell extender on standard semen parameters, fertilizing ability, lipid peroxidation (LPO) and antioxidant activities comprising reduced glutathione (GSH), glutathione peroxidase (GSH-Px), catalase (CAT) and superoxide dismutase (SOD) after the cryopreservation/thawing of bull semen. Nine ejaculates for each bull were included in the study. Three groups, namely taurine (2 mM), cysteine (2 mM), and control, were designed to analyze the antioxidants in Bioxcell. The addition of cysteine led to higher motility, compared to the other groups ($p< 0.001$). Cysteine showed a greater protective effect on the percentages of acrosome and total abnormalities in comparison to the other groups ($p< 0.001$). No significant differences were observed in hypo-osmotic swelling test (HOST), following supplementation with antioxidants during the freeze–thawing process. No significant difference was observed in non-return rates among groups. In biochemical assays, the additives did not show effectiveness on the elimination of malondialdehyde (MDA) formation and

Ram semen contains sufficient quantities of superoxide dismutase (SOD) and much lower concentrations of glutathione peroxidase (GSH-Px) and catalase (CAT) to prevent oxidative damage. The anti-oxidant capacity of the sperm cell is limited, due to a small cytoplasmic component, which contains these anti-oxidants to scavenge the oxidants. However, the concentration of these anti-oxidants may decrease considerably by the dilution of the semen. The aim of the present

maintenance of GSH and GSH-Px activities, when compared to controls. CAT activity was demonstrated to be significantly higher upon the addition of 2 mM taurine ($p< 0.001$), while the level of MDA increased, indicating oxidative stress in this group. SOD activity was significantly elevated in the group with cysteine, compared to the other groups ($p< 0.001$).

Oral Presentation 10

The Effect of antioxidants on Sperm Parameters, Lipid peroxidation (LPO), Total glutathione (Total GSH) and Antioxidant Potential (AOP) Activities of Post-Thawed bovine Semen

methionine (2.5 and 7.5 mM), carnitine (2.5 and 7.5 mM), inositol (2.5 and 7.5 mM) and no additive (control), was cooled to 5°C and then frozen in 0.25 ml French straws. Frozen straws were thawed individually at 37°C for 20 sec in a water bath for the evaluation.

The extender supplemented with 7.5 mM doses of carnitine and inositol led to higher subjective motility percentages (61.9±1.3% and 51.3±1.6%) compared to the other groups. The addition of methionine and carnitine at doses of 2.5 and 7.5 mM and inositol at doses of 7.5 mM provided a greater protective effect in the percentages of total abnormality in comparison to the control and inositol 2.5 mM ($p<0.001$). In biochemical parameters, supplementation with antioxidants did not significantly affect LPO and total GSH levels in comparison to the control group ($p>0.05$). The