CONTENTS

1. ADULT STEM CELL – ISOLATION AND CULTURE PROTOCOLS

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ABSTRACT
Stem cells (SC) are immature cells with capacity of self renewal and differentiation in other mature cell types. Of major interest for fundamental researches and clinical trials are hematopoietic stem cells (HSC) and mesenchymal stem cells (MSC). In our laboratory, stem cells were isolated by various methods, our efforts being focused on optimization of both isolation protocols and in vitro stem cells expansion. We performed a comparative analysis of the results obtained with different isolation procedures when stem cells were isolated from bone marrow, peripheral blood and placentary blood. The best source for both hematopoietic stem cells (HSC) and mesenchymal stem cells (MSC) seemed to be the bone marrow. We checked the viability of cells and their immunophenotypic characters. From our data we can conclude that hematopoietic and mesenchymal stem cells present morphological, functional and viability characters required for their future utilization in cell differentiation protocols.

Key words: adult stem cells, isolation, culture.

2. BRIEF REVIEW: DNA DAMAGE AND OXIDANTS IN THE AGING PROCESS

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ABSTRACT
Free radicals damage to cells, leads to the pathological changes associated with aging. Free radicals are highly reactive compounds produced in normal process through the body's use of oxygen. Environmental pollutants such as smog, radiation, cigarette smoke, herbicides, pesticides and many drugs can react within the body to cause production of free radicals. While free radicals are normal products of our cells and have certain beneficial roles in the body, increased levels in body tissues can be detrimental to health. Free radicals multiply through a series of chain reactions and can attack the polyunsaturated fatty acids of membrane phospholipids, damaging both the structure and function of cell membranes. There is extensive evidence to implicate free radicals in the development of a number of degenerative diseases.
The degenerative diseases associated with aging include cancer, cardiovascular diseases, brain dysfunction, cataract, immune system decline. The functional degeneration of somatic cell during aging appears to contribute to these diseases. One important factor in longevity appears to be the basal metabolic rate, which is about seven times higher in a rat than a human and which could markedly affect the level of endogenous oxidants and other mutagens produced as by-products of metabolism. Oxidant by-products of normal metabolism cause extensive damage to DNA, protein and lipid. This DNA damage (the same as that produced by radiation) is a major contributor to aging and to degenerative diseases of aging.

Key words: oxidants, free radicals, DNA damage, aging.

3. PROTECTIVE EFFECT OF ANTIOXIDANTS IN OXIDATIVE STRESS INDUCED BY SHORT TERM EXPOSURE TO ULTRAVIOLET RADIATION

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ABSTRACT
Humans live on our planet under the continuous action of various environmental factors such as ultraviolet radiation, atmospheric pollutants or various chemicals with a pro-oxidant effect. Exposure to ultraviolet radiation can produce damaging effects on the human body, by intensifying the lipid peroxidation processes and by altering the DNA synthesis, because of increased reactive oxygen species production. The authors have followed the dynamics of reactive oxygen species (ROS) in animals exposed to ultraviolet radiation, as well as the protective effect of some antioxidant drugs commonly used in clinical practice.

Key words: oxidative stress, antioxidants, ultraviolet radiation.

4. THE ROLE OF REACTIVE OXYGEN SPECIES, ANTIOXIDANTS AND NITRIC OXIDE IN THE ONSET OF LABOR AT TERM

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ABSTRACT

The mechanism of the onset of labor at term have not been completely understood. The aim of our study was to determine the serum levels of the products of reactive oxygen species, antioxidants and nitric oxide, and to investigate their possible effects in the onset of labor at term. We found significantly higher values of serum reactive oxygen species, but also significantly lower serum antioxidants and nitric oxide at the beginning of labor. The conclusion was that the increased level of reactive oxygen species can be a cause of increased contractility of uterus at the onset of labor, not only because they can stimulate the prostaglandin production which produce the contraction of uterus, but also because they can consume the nitric oxide which produce the relaxation of uterus during the pregnancy.

Key words: reactive oxygen species, nitric oxide, antioxidants, onset of labor

5. EVALUATION OF COAGULATION IN PATIENTS WITH HIP FRACTURES UNDER ANTICOAGULANT TREATMENT, BY THROMBOELASTOGRAPHIC ASSAY

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ABSTRACT
Our study consists in coagulation monitoring by thromboelastographic method in patients hospitalized in orthopedic surgery for hip fractures. All the 16 patients involved in our research were under anticoagulant treatment with Low Molecular weight Heparins in order to prevent venous thrombosis; this is the reason for which was very important to observe the appearance of hypocoagulability tendency, phenomenon that may be not detected by routine coagulation tests.
The aim of our study is to demonstrate the sensitivity of this method, which estimates the clot formation both quantitatively and qualitatively.

Key words: thromboelastography, anticoagulants, hip fracture.

6. REGULATION OF BASAL TONE IN ISOLATED HUMAN BRONCHIAL SMOOTH MUSCLE

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ABSTRACT
The significance of humoral factors in maintaining the airways basal tone is interesting not only for in vitro conditions. In vivo, in patients with bronchial hyperreactivity, excepting the "classical" imbalance between the components of autonomic nervous system, the imbalance in local mediators' production has a great importance for the modulation of basal tone and also for the response to various contractile. Our studies revealed the beneficial, relaxing effect of prostaglandins derived by cyclooxigenase pathway in respiratory epithelial cells. It is well known that in asthmatic patients a severe denuding of epithelium occurs, associated with a decrease of relaxing mediators, resulting in airways narrowing and increased reactivity.

Key words: basal tone, human bronchial smooth muscle, epithelium, prostaglandins.

7. PLASMA LEVELS OF TNFα AND NITRIC OXIDE IN PATIENTS WITH SEVERE CHRONIC HEART FAILURE

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ABSTRACT
Introduction: TNF-α has been detected in cardiac related illness including myocarditis, ischemic heart disease, dilated cardiomyopathy and congestive heart failure. TNF-α exerts a negative inotropic effect directly and indirectly, the latter being mediated by increase of nitric oxide (NO) production.
Aim of the study: to investigate plasma levels of TNF-α and NO in patients with severe chronic heart failure and to evaluated the outcome of these patients after 12 months of follow-up.
Methods: In 18 patients with severe chronic heart failure (EF < 35%), TNF-α (ELISA-sandwich R&D System, high sensitivity), CRP (nano-RID, binding-site) and NO (by microcolorimetric dosage based on the Griess reaction).
Results: In patients with heart failure as compared with the controls, plasma levels of TNF-α (2.89±0.39 ng/ml vs 0.68±0.16 ng/ml; $p<0.0001$)) and NO (37.1±3.21μM/L vs 16.68 ± 0.88 μM/L; $p<0.0001$) were higher. Over a follow-up of 12 months 4 patients died and 8 patients had at least one readmission for severe heart failure. In heart failure TNF-α may be a potential biochemical marker closely related to the severity and the prognosis of disease.

Key words: TNF-α, NO, heart failure.

8. EXPERIMENTAL RESEARCH ON THE FLUOXETINE ANTINOCICEPTIVE EFFECTS

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ABSTRACT
Aim: Experimental research on fluoxetine potent antinociceptive effects and its interactions with various opioid and adrenergic receptor derivatives, in cutaneous and visceral pain models were investigated.
Material and method: The experiment was carried out, with white mice (20-25g), divided into 7 groups of 7 animals each, treated orally with the same volume of solution, for 7 days, as follows: Group I: distilled water 0.3ml (DW); Group II (M): metamyzole 10mg/kbw; Group III (FLX-10): fluoxetine 10mg/kbw; Group IV (FLX-30): fluoxetine 30mg/kbw; Group V (FLX+ATN): fluoxetine 30mg/kbw + atenolol 1mg/kbw; Group VI (FLX+TLZ): fluoxetine 30mg/kbw + tolazolin 1mg/kbw, Group VII (NLX+FLX): naloxone 5mg/kbw + fluoxetine 30mg/kbw. Hot plate and tail flick were used to assess fluoxetine-induced antinociception. The model of visceral pain consists of writhing test using diluted acetic acid (0.6%). Data were statistically analized by Fisher-Tackey tests.
Results and conclusions: Oral administration of fluoxetine (10-30mg/kbw) resulted in a significant and dose-dependent antinociceptive effect in writhing test ($p<0.05$). This antinociceptive effect was increased by atenolol (1mg/kbw) association. Fluoxetine (30mg/kbw) also exhibited antinociceptive effect in hot plate assay. Further, tolazoline administration antagonized fluoxetine visceral analgesic effect after 15 minutes of chemical peritoneal irritation. Fluoxetine-induced antinociception was significantly inhibited by naloxone, after 20 minutes of writhing test. These data suggest that fluoxetine-induced antinociception involves central opioid, adrenergic and serotoninergic pathways.

Keywords: $SSRI_s$, fluoxetine, antinociception, pain

9. FOR THE GENERAL PRACTITIONER. VALUABLE AND STILL PROMISSING: THE LIPOIC ACID

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ABSTRACT

10. BOOK REVIEW: CLINICAL PHYSIOLOGY – A MILESTONE IN CONTEMPORARY MEDICINE

CLINICAL PHYSIOLOGY OF THE VENOUS SYSTEM

Francisc Schneider, Ioana Raluca Siska, Jecu Aurel Avram

Kluwer Academic Publishers, 2003
303 pages, ISBN 1-4020-7411-5

Holistic vision on human beings and life is imposed in all fields of medicine. One of the consequences of this vision is to see the circulatory system in a unitary way, paying a special attention on venous and lymphatic system. A distinctive achievement in this field is the "Clinical Physiology of the Venous System" authors: Professor Francisc Schneider, Ioana Raluca Siska and Professor Aurel Avram, printed at Kluwer Academic Publishers (Dordrecht, Boston, London). The book, a volume of 302 pages, represents an important accomplishment of the physiology team led by Professor Francisc Schneider, distinguished physiologist and school creator. The book, edited in excellent graphic conditions has 8 chapters preceded by an introduction, where are presented data regarding embryology and anatomy of the venous system.

In the 1st chapter, authors present hydrodynamic laws applied to blood flow into the veins and define parameters that characterize this flow.

The 2nd chapter regards the functions of venous system, insisting on the fact that veins are not just passive blood collectors. Functional particularities of veins from different parts of the body like brain, liver, lung, face, are presented.

The next chapter is focused on the morphological and functional aspects of the venous wall. After presenting each element of their normal function, the implications in pathology and aspects of the functional imbalance in the venous wall are outlined. In this way, the book builds a link between normal and pathology, being useful especially for clinical practice.

Some short aspects of the pharmacology of the venous system are also presented.

The next chapter (and the most substantial in the book) concerns venous tonus regulation. Here the authors present the role of the 3 main groups of factors involved in regulation: vegetative nervous system, hormones (both polypeptides and steroids) and local factors (eicosanoids, NO, endothelin-1, etc.). After this, different sides of venous pathology are presented, starting with varicosities and ending with veins trauma of inferior limbs.

A special attention is paid to pathogenic mechanisms and classifications of pathological entities, patient's clinical examination, and laboratory investigations, direct and differential diagnostic.

Other aspects presented in the book are general lesions appeared during therapy (surgical and drug therapy). The book is a strong argument for a more and more pronounced vanishing of the border between fundamental and applicative medicine, and science in general.

Each chapter starts with a „Take home messages" box, where are presented the keystones of the chapter. This is very useful to those who want to remember the essential of the chapter.

Substantial references of about 800 titles are especially useful to those who seek to go deeper in one or another of the approached aspects.

The Forward, signed by **Bernard Swynghedauw**, PhD, MD, editor of **Basic Science for the Cardiologist** series and former *President of Federation of Physiologic Societies in Europe* (FEPS) remarks the utility of the approached issues for readers and also its importance for medical practice.

The book, of very good quality, is without doubt useful to physicians and to all those who perform research in the areas of circulatory system.

Mihai Nechifor