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1. MINIREVIEW: THROMBIN ACTIVATABLE FIBRINOLYSIS INHIBITOR (TAFI): PHYSIOLOGY AND CLINICAL IMPLICATIONS

Ioana Brudasca
Department of Medical Biochemistry "Iuliu Haţieganu" University of Medicine and Pharmacy Cluj Napoca

Address for correspondence: Dr. Ioana Brudasca, Medical Clinic I, Clinicilor Street 3-5, 3400 Cluj Napoca, Romania,e-mail: ioanabrudasca@yahoo.com

ABSTRACT
Thrombin activatable fibrinolysis inhibitor (TAFI) is a fibrinolysis attenuator. It exerts its role by a procarboxypeptidase action, removing Lys residues from fibrin, which results in a decreased binding of plasminogen to fibrin and a less efficient fibrin break – down by plasmin. TAFI is activated by plasmin and by the thrombin – thrombomodulin complex, representing a link between coagulation and fibrinolysis. It also seems to be involved in tissue repair and in the inflammatory response. TAFI is involved in various clinical conditions associated with a thrombotic tendency, such as activated protein C resistance, stroke, coronary heart disease, preeclampsia and metabolic syndrome.

Key words: TAFI, fibrinolysis, thrombosis

2. MINIREVIEW: THE PLASTICITY OF CORD BLOOD STEM CELLS

Ioana-Raluca Siska, Horia Maniu*, Daciana Nistor, Erika Deak, Carmen Bunu, Gabriela Tanasie, Florina Mirea and Virgil Paunescu

Department of Physiology and Immunology, Victor Babes University of Medicine and Pharmacy Timisoara, Romania

*Nicolae Simionescu Institute of Cellular Biology and Pathology Bucharest, Romania

Address for correspondence: Dr. Ioana-Raluca Siska, Eftimie Murgu Square No. 2, 300041 Timisoara, Romania, e-mail: irsiska@yahoo.com

ABSTRACT

Umbilical cord blood stem cells are stem cells collected from the umbilical cord blood at birth. Until now, stem cells drawn from umbilical cord blood have been reserved mostly for treating children. However, new research shows that because the umbilical cord cells proliferate so rapidly, they can indeed be used to treat adults and may even replace bone marrow and other cell types. Cord blood transplantation "holds the promise of making it so everyone has a donor". This review emphasis on the differentiation capacity of human cord blood-derived stem cells towards several lineages, such as endothelial, muscular, epithelial, neural, and even to insulin-secreting cells.

Key words: human, cord blood, stem cells, plasticity

3. DYNAMICS OF REACTIVE OXYGEN SPECIES AND OF ANTIOXIDANT SYSTEM IN HYPOBARIC HYPOXIA INDUCED BY THE ALTITUDE EXPOSURE

Adriana Muresan[1], Daniela-Rodica Mitrea[1], Steliana Ghibu[2], Soimita Suciu[1], Meda-Sandra Orasan[3]

[1]Department of Physiology, U.M.Ph. "Iuliu Haţieganu" Cluj-Napoca

[2]Department of Pharmacology, U.M.Ph. "Iuliu Haţieganu" Cluj-Napoca

[3]Medical Student, U.M.Ph. "Iuliu Haţieganu" Cluj-Napoca

Address for correspondence: Prof. Dr. Adriana Muresan, Clinicilor Street no. 1, 400006 Cluj Napoca, Romania

ABSTRACT

The hypobaric hypoxia is characterized by the complex mechanisms in which the reactive oxygen and nitrogen species are involved.

In hypoxia certain cellular compounds are reduced and during reoxygenation the *reperfusion lesions* appear. These lesions are produced because of the reactive oxygen species, after the transfer of the electrons on the oxygen molecule.

The authors have followed the oxidative stress and the effect of some antioxidants (superoxiddismutase-catalase, vitamin E) in animals exposed to hypobaric hypoxia. The results pointed out a supplementary oxidative stress in animals exposed to hypobaric hypoxia and a more efficient antioxidant protection in rats, which have received vitamin E.

Key words: hypobaric hypoxia, oxidative stress, superoxiddismutase-catalase, vitamin E

4. METHOD OPTIMIZATION FOR LARGE SCALE PRODUCTION OF ANTI-CD34 AND ANTI-CD45 MONOCLONAL ANTIBODIES IN HYBRIDOMA CULTURES

Carmen Bunu[1], Carmen Tatu[1], Ioana Siska[1], Gabriela Tanasie[1], Florina Mirea[1], Daciana Nistor[1], Mircea Grindei[2] si Virgil Paunescu[1]

[1]Physiology Department, "Victor Babes" University of Medicine and Pharmacy, Timisoara

[2] Student at"Victor Babes" University of Medicine and Pharmacy, Timisoara

Address for correspondence: Dr. Carmen Bunu, Department of Physiology, "Victor Babes" University of Medicine and Pharmacy Timisoara, 2 Eftimie Murgu Square, 300041, Timisoara, Romania, e-mail: cbunu@umft.ro

ABSTRACT
The use of monoclonal antibodies for laboratory in vitro isolation of adult hematopoietic and mesenchymal stem cells could represent a useful and effective tool in the development of a vast array of cellular therapies. The AC133 and anti-CD45 monoclonal antibodies produced in culture by standard hybridoma cellular lines serve for the positive selection of a CD34+ subpopulation and negative selection of adult mesenchymal stem cells, respectively. We report the production of a maximum of 0.2 mg pure antibodies in 10 mL suspension. Further development will include the conjugation of the obtained antibodies to fluorochromes or magnetic beads and their usage in the isolation of stem cells for the cellular therapy of myocardial regeneration following cardiac arrest.

Keywords: monoclonal antibodies, anti-CD34, anti-CD45, stem cells, hybridoma.

5. THE CHANGES OF OXIDATIVE STRESS MARKERS IN UTERUS TISSUE OF OVARIECTOMIZED FEMALE RATS AFTER THE ADMINISTRATION OF SOY ISOFLAVONE

Lavinia Sabau, Suciu Soimita, Adriana Muresan, Doina Daicoviciu, Clichici Simona, David Ion, Doina Colcear
Department of Physiology, UMF "Iuliu Hatieganu" Cluj-Napoca

Address for correspondence: Dr. Lavinia Sabau, Clinicilor Steet no. 1, 400006 Cluj Napoca, Romania

ABSTRACT
The aim of our study was to determine the effect of soy isoflavone on uterus tissue levels of reactive oxygen species, antioxidants and nitric oxide in female rats with experimentally induced menopause. We found that an increased uterus tissue level of reactive oxygen species and decreased levels of antioxidants and nitric oxide accompanies experimentally induced menopause in rats. Soy isoflavone reduces significantly the level of free radicals in uterus tissue of ovariectomized rats and increases the level of nitric oxide in uterus tissue of these rats. Soy isoflavone has antioxidant protective effects in uterus tissue of ovariectomized rats.

Key words: oxidative stress, uterus tissue, menopause, isoflavone.

6. IN VITRO EXPANSION OF HUMAN BONE MARROW DERIVED UNDIFFERENTIATED MESENCHYMAL STEM CELLS

Gabriela Tanasie[1], Simona Anghel[1], Calin Tatu[1], Violeta Paunescu[2], Ioana Raluca Siska[1], Carmen Bunu[1], Romulus Fabian Tatu[3], Hortensia Ionita[4], Virgil Paunescu[1]
[1]Department of Physiology and Immunology, University of Medicine and Pharmacy "Victor Babes" Timisoara
[2]Laboratory of Immunology, County Emergency Hospital Timisoara
[3]I[st] Department of Orthopedy, University of Medicine and Pharmacy "Victor Babes" Timisoara
[4]Department of Hematology, University of Medicine and Pharmacy "Victor Babes" Timisoara

Address for correspondence: Dr. Gabriela Tanasie, Department of Physiology, "Victor Babes" University of Medicine and Pharmacy Timisoara, 2 Eftimie Murgu Square, 300041, Timisoara, Romania

ABSTRACT
For most therapeutic purposes using mesenchymal stem cells (MSCs), the preliminary in vitro cell expansion is required. The aim of the present study was to evaluate and optimize the culture conditions for better growth and proliferation of undifferentiated MSCs. We used bone marrow samples from sternum aspirates and from iliac crest. The mesenchymal stem cells were isolated using standard adherence procedure and the cell growth characteristics were evaluated by morphological

studies, surface markers analysis, CFU-F and proliferation potential assays. The results revealed the critical importance of fetal bovine serum and fibroblast growth factor addition in culture media. Despite of similar morphological and phonotypical characteristics of cells, the clonogenic capacity and the proliferative potential of in vitro culture of MSCs seem to be dependent on the composition of culture media. According to harvesting procedure, we found significant differences between samples. The better clonogenic capacity and proliferative potential of sternum aspirates versus iliac crest ones may be due to better sternal vascularization or to peripheral blood contamination in iliac aspirates samples.

Key words: mesenchymal stem cells, in vitro culture, media composition

7. EXTENDED SPECTRUM BETA LACTAMASE PRODUCING *KLEBSIELLA PNEUMONIAE* ISOLATED FROM SURGERY AND INTENSIVE CARE UNITS

Licker M[1], Sandesc D[2], Anghel A[3], Tutelca A[4], Orb C[4], Baditoiu L[5], Zugravu R[1], Hogea E[1], Moldovan R[1]

[1] Microbiology Department, University of Medicine and Pharmacy "Victor Babes" Timisoara,
[2] Intensive Care Unit, Timisoara County Hospital
[3] Biochemistry Department, University of Medicine and Pharmacy "Victor Babes" Timisoara,
[4] Clinical City Hospital Timişoara
[5] Epidemiology Department, University of Medicine and Pharmacy "Victor Babes" Timisoara

Address for correspondence: Dr. Monica Licker, Department of Microbiology, "Victor Babes" University of Medicine and Pharmacy, 2 Eftimie Murgu Street, 300041, Timisoara, Romania

ABSTRACT

Background: A huge increase in antibiotic-resistant bacterial pathogens, including extended spectrum beta lactamase producing germs (ESBL) is one of the major problems facing medicine and science today**. Aims\Objectives**: The aim of our study was to determine the prevalence of ESBL producing germs, especially of *Klebsiella pneumoniae* strains, isolated from patients hospitalised in Surgery and Intensive Care Units (ICU), and their associated resistance patterns. **Methods**: Identification of germs was performed by the API system (BioMerieux France) and susceptibility tests by disk - diffusion tests (CLSI standards) with manual and automatic (Osiris -Bio Rad Laboratories) reading methods. We categorized these germs according to their phenotypic patterns. For ESBL producing germs we also used disk synergy tests and PCR amplification of SHV and TEM genes. **Results**: From 611 samples (urines, wound secretions, blood, bronchoalveolar fluids, etc.), collected during a period of one year (June 2005-June 2006) we isolated 466 microbial strains with nosocomial potential. 216 (46.35%) from these strains were represented by enterobacteria, from which, 78 strains (36.11%) were ESBL producers. **Discussions**: The highest percentage was noticed in the case of ESBL producing *Klebsiella pneumoniae* (45 from 74 strains – 60.81%). The majority of these strains were involved in urinary, respiratory and surgical site nosocomial infections, especially in ICU and all of them have associated other resistance phenotypes as well. **Conclusions**: The high prevalence of ESBL producing germs is explained by the immunosuppresion of these patients and by their prolonged antibiotic therapy. The most important predisposing factor is represented by multiple invasive diagnostic and therapeutic procedures involved. Proper surveillance of medical staff and a rational policy in prescribing antibiotics in this department are therefore mandatory.

Key words: beta lactamase, ESBL

8. THE EVALUATION OF OSTEOCALCIN AND OSTEOPROTEGERIN, OSTEOGENIC MARKERS OF BONE REMODELING IN RHEUMATOID ARTHRITIS

Ramona Cioaca, Daciana Nistor, Ani Mic, Florina Mirea, Gabriela Tanasie, Ioana Siska, Carmen Tatu, V. Paunescu

Department of Physiology and Immunology, “Victor Babes” University of Medicine and Pharmacy Timisoara

Address for correspondence: Ramona Cioaca, Department of Physiology and Immunology, Victor Babes University of Medicine and Pharmacy Timisoara – Piata E. Murgu no.2, Timisoara, Romania; Tel/Fax 256-490507; E-mail: ramonacioaca@umft.ro

ABSTRACT

The purpose of this study is to evaluate some osteogenic markers involved in bone remodeling, such as the estimation of osteocalcin (OC) and osteoprotegerin (OPG/RANK) concentrations in the sinovial fluid as well as in the serum of rheumatoid arthritis (RA) patients. These measurements were performed in the initial stage of the disease, without using any anti-inflammatory non-steroidal therapy for at least 1 month before our study began. The concentration of OPG in the sinovial fluid represented 14.25±0.75 pmol/l while in the serum the concentration was 1.69±0.80 pmol/l, which was significantly increased ($p<0.001$) compared to the values determined in the serum of healthy controls (1.19±0.30 pmol/l). The increase of OC concentration evolves in the same manner in both sites of our measurements, the values being of 6.43±4.80ng/ml and 19.9±4.8ng/ml respectively, compared to the values determined in healthy controls, in the sinovial liquid (<0.5ng/ml) and in the serum (3.1±0.1ng/ml).

Key words: rheumatoid arthritis, osteocalcin, osteoprotegerin, bone remodeling, bone metabolism.

9. EVALUATION OF THE TOTAL ANTIOXIDANT STATUS IN GUINEEA PIGS IN SIMULATED UNITARY DIVES AT 6 ABSOLUTE ATOMSPHERES

Cecila Adumitresi, Nicolae Ceamitru, Ileana Ion, Ninela Radulescu, Carmen Ciufu, Cristina Farcas, Gabriela Lilios, Loredana Pazara, Gheorghe Badiu

Physiology and Physiopathology Department, Faculty of Medicine, “Ovidius” University, Constanța

Address for correspondence: Dr. Cecilia Adumitresi, Department of Physiology, “Ovidius” University Constanta, 2 Decebal Street no. 82, Constanta

ABSTRACT

The use of respiratory gas mixtures including high oxygen concentrations in big depth dives, aviation or space travels, as well as the medical use of hyperbaric oxygen revealed also an accident risk deriving from the toxicity of oxygen inhaled in hyperbaric conditions, due to the increased formation of reactive oxygen species (ROS). The balance between ROS production and the supply of protective anti- oxidants seems essential in limiting the negative effects of those highly reactive molecular species. Our study aims to measure the protective antioxidant response under simulated experimental hyperbarism by determining the total antioxidant status (TAS). The results indicate a significant growth of the TAS level in conditions of hyperbarism, thus pointing to the implication of oxidizing mechanisms of the hyperbaric stress conditions and to the way of adaptation to such conditions.

Key words: hyperbarism, oxidative stress, respiratory mixture, total antioxidant status