Federation of European Physiological Societies

Abstracts
of the First FEPS Congress

9–12 September 1995, Maastricht, The Netherlands

Preface

In this abstract book you will find the abstracts as submitted to the Organizing Committee of the First Congress of the Federation of European Physiological Societies (FEPS). No selection was made regarding the scientific quality of the abstracts. All abstracts have been reproduced without editorial modifications. Some abstracts were retyped for better reproduction.

The decision to accept the abstracts as submitted was made by the Organizing Committee and the Executive Committee of FEPS to fulfill one of the main aims of FEPS, that is, to stimulate the collaboration and exchange of ideas between physiologists in Europe. Therefore, we have also decided to publish the abstracts of our colleagues from Central and Eastern Europe, who were not able to attend the meeting for financial reasons.

Springer
424 Pflügers Arch-Eur J Physiol 430 (4) [Suppl] R9–R170 (1995)

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POSSIBLE RECIPROCITY: ADP-STIMULATED-Ca^{2+}-ACTIVATED RESPIRATION DURING SUCCINATE OXIDATION IN RATS MITOCHONDRIA IN HYPOXIC HYPOXIA CONDITIONS. I.Shostakovska, M.Doliba, A.Babsky, M.Vatamaniuk, O.Kuka, V.Artym.
Objective of our study was to investigate Ca^{2+}-activated respiration and Ca^{2+}-transport into mitochondria in hypoxic hypoxia conditions. Liver mitochondria were isolated by modified Shneider's method (Kondrashova, 1984). Respiration was registered polarographically. Earlier it was shown, that 1 or 2 days exposing of animals to hypoxic hypoxia (during 4 hours every day; 32mm Hg) lead to decrease of acetylcholine level in rat liver and to activate succinate oxidation in mitochondria. Begining from 7 day of hypoxia treatment the level of acetylcholine in tissue was increasing and it was connected with activation of α-ketoglutarate oxidation (Doliba, 1993). Results we have obtained point, that in initial adaptation days during succinate oxidation observed reliable decrease Ca^{2+}-activated respiration, intensity ions transport into mitochondria and increase of α-ketoglutarate oxidation. On the 7-12 days of adaptation observed increase Ca^{2+} activated respiration during succinate oxidation without reliable influence during oxidation of α-ketoglutarate. We admit that decrease in Ca^{2+}-activated oxidation connected with increasing of ADP-stimulated oxidation. This point of view is similar with Chance's idea that "respiratory activation by Ca^{2+} and oxidative phosphorylation of ADP involved the same energy conserving sites in respiratory chain". Changing in Ca^{2+}-stimulated oxidation during 7-12 days of experiment we explain adaptation processes which take place: prevailing of acetylcholine status of organism, decrease of ADP-stimulated and increase of Ca^{2+}-activated respiration during succinate oxidation.

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CONSENSUS SEQUENCE OF PEPTIDE FRACTIONS' POOL OBTAINED FROM KIDNEY' CORTEX SUBSTANCES AND ITS IMMUNOREGULATIVE INFLUENCE. I.P.Kaidashev
We determined the common consensus aminoacid pool sequnce of peptide extract fractions which were obtained from pig kidneys' cortex substance. Peptides were extracted from tissue by 0,5% solution of trichloracetic acid in the presence of zinc and magnesium ions with following separation of biological material with molecular weight lower 10 kD. Peptide extract was analized by HPLC and sequenced by Edman's degradation. Peptides from kidneys and peptides from MHC molecules class II has similar phisical and chemical characteristics. The common schem of kidneys' peptide organization is dominating residues of Val, Asp, Glu in position 2, Lys in position 3, Asp in position 4 and Arg in 6 position. On the basis of found out motif we determined 7 proteins containing this model: aconitase, cofilin, destrin, pro-TNF-alpha, progastrin, prorelaxin and sorbin. The kidney peptide fractions has ingibiting properties on ConA-induced mice splenocytes proliferation (up to 55%). More hydrophylic fractions are ingibited and more hydrophobic ones are stimulated proliferative response of IL-2-depended cell line (CTLL). This results testify the existence of the cell function organ regulation by peptide molecules which executes proliferation, differentiation and cooperation between immunocytes and special parenchim cells of kidney.

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TO THE MECHANISM OF SEROTONINE INHIBITING INFLUENCE ON ERYTHROPOIETIN BIOSYNTHESIS. N.V.Stepanova, V.I.Philimonov, S.N.Chernova
We had established [1991] that 2-3 multiple increase of serotonine concentration in blood inhibits the erythropoietin (EP) secretion. Taking into account the key part of cyclic nucleotides in EP biosynthesis mechanism [Fisher J.W., 1989], our aim was to study c-AMP and c-GMP concentration in Wistar rats tissue in conditions of hypoxic stimulation of EP production in hyperserotoninemia. Control group rats were injected with physiological solution; the 1-st experimental group was injected with serotonine; 2-nd one - with serotonine in conditions of preliminary serotonine receptors blockade by morphine. After injections all the rats were hypoxically exposed accoding to Schuster S.J.[1987]. C-AMP and c-GMP concentration was determined in the cortical and cerebral renal layers by the radioimmune technique. In the control group c-AMP and c-GMP concentration ratio was 2:1 in both layers. In hyperserotoninemia the response reaction to hypoxia was different: the ratio changes adequately 1:1. In serotonine receptors preliminary blockade hyperserotoninemia hasn't changed the ratio of c-AMP and c-GMP (2:1). Taking into consideration that c-AMP activates A-kinasa - the basic enzyme, stimulating EP synthesis, the ratio violation of c-AMP and c-GMP from 2:1 to 1:1 under the influence of serotonine leads to EP secretion inhibition. Serotonine receptors blockade eliminates this serotonine-effect that proves it's specificity.

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EXPRESSION AND ORGANIZATION OF FOUR DIFFERENT TITIN EPITOPES IN CULTURED HUMAN SKELETAL MUSCLE CELLS. Frank T.L. van der Loop[1], Peter F.M. van der Ven[2], Gert Schaart[1], Guillaume J.J.M. van Eys[1] and Frans C.S. Ramaekers[1].
Titin is one of the first sarcomeric proteins detected in the process of myofibrillogenesis of striated muscle. During embryogenesis this high molecular weight protein is first expressed in a punctate pattern, while during maturation these dots organize into a cross-striated pattern. Cultured human skeletal muscle cells that can be induced to differentiate were used to analyse the dynamic process of titin integration into the sarcomere. For that purpose antibodies against four well-defined titin epitopes, as well as antibodies against desmin, sarcomeric myosin and filamin were applied to study cells in subsequent stages of differentiation. In postmitotic mononuclear myoblasts, the different epitopes in the folded titin molecules were united, displayed as seperate, non-colocalized dots in the cytoplasm of the cells. During elongation and fusion of the cells, the dots move along the stress fiber-like structures to reach their localization at either the Z-line, the A-I junction or the A-band. In maturated, fused myofibers cross-striated patterns of the titin epitopes are observed. The direction of unfolding of the titin molecule (from the amino-terminus towards the carboxy-terminus of the molecule) and the integration of titin in both the Z-line towards and the M-line of the sarcomere can thus be monitored.

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