

75TH ANNIVERSARY OF ALBERT SZENT-GYÖRGYI'S NOBEL PRIZE AWARD

FINAL PROGRAMME

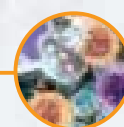
Szeged 22-25 March, 2012



SZÉCHENYIPLAN

**POSTER VIEWING II.****SATURDAY 24 MARCH 11:50–12:30**

- P-G9.** W. Xia, Y. Qin, B. Riederer, A. K. Singh, R. Engelhardt, P. Song, D. Tian, M. Soleimani, U. Seidler (*Hannover, Germany*)
The anion transporter slc26a6 (putative anion transporter-1) regulates CO₂/HCO₃⁻ induced murine small intestinal fluid absorption
- P-G10.** K. Farkas, Z. Rakonczay Jr., F. Nagy, T. Molnár, Z. Szepes, L. Varga, T. Takács, T. Wittmann, A. Schnúr, V. Venglovecz, Y. Sunil, J. Hubricht, B. Riederer, M. Király, Á. Zsembery, G. Varga, U. Seidler, P. Hegyi (*Szeged, Hungary*)
The role of ion transporters in the pathogenesis of ulcerative colitis
- P-G11.** L. Kiss, F. Walter, A. Bocsik, S. Veszeka, B. Ózsvári, L. Puskás, A. Szüts, P. Révész, M. Deli (*Szeged, Hungary*)
Toxicity and absorption enhancer profile of surfactants on a human intestinal barrier model
- P-G12.** L. Kotsis, M. Póczi (*Salgótarján, Hungary*)
Original esophageal surgical procedures
- P-G13.** D. Laczkó, A. Rosztóczy, P. Hegyi, Z. Rakonczay Jr., T. Wittmann, M. Katona, V. Venglovecz (*Szeged, Hungary*)
Functional characterization of human oesophageal epithelial cells

IMMUNOLOGY & INFLAMMATION**Chairs: Rolland Gyulai** (*Szeged, Hungary*), **Kornelia Szabó** (*Szeged, Hungary*)

- P-I13.** A. Marton, C. Vizler, E. Kusz, Z. Szathmary, K. Nagy, Z. Szegletes, G. Varo, L. Siklos, R. Katona, Z. Howard, E. Duda, J. Minarovits, K. Buzas (*Szeged, Hungary*)
Melanoma cell-derived exosomes alter macrophage and dendritic cell functions in vitro
- P-I14.** K. Szabó, E. Tóth-Molnár, K. Balogh, H. Polyánka, H. Orvos, H. Ócsai, L. Kemény, M. Széll, J. Oláh (*Szeged, Hungary*)
Neonatal blue light phototherapy and melanocytic nevi: a twin study
- P-I15.** R. Gyulai, F. Kovács-Sólyom, J. Prihoda, L. Kemény (*Szeged, Hungary*)
Interleukin-1 receptors are differentially expressed in normal and psoriatic T lymphocytes

(SMA) was occluded for 45 min, which was followed by 120 min reperfusion. Methane treatment was started during the last 10 min of ischemia and lasted for 5 min during reperfusion. Systemic and mesenteric haemodynamics were monitored, the microcirculation of the serosa of the terminal ileum was observed with intravital videomicroscopy using OPS technique. The tissue generation of reactive oxygen species (ROS) was detected by a chemiluminescence assay, myeloperoxidase (MPO) activity was assessed by fluorimetric analysis, nitrotyrosin level was determined by ELISA assay.

Results: The significant microcirculatory dysfunction (as evidenced by IVM) after IR was remarkably improved by methane treatment, a significantly decreased ROS production and MPO activity was detected in contrast with IR group. Furthermore methane treatment highly reduced the elevated nitrotyrosin level after ischaemia.

Conclusion: Exogenous methane improves the perfusion deficiency of the mucosa after IR, and this effect may be linked to ROS scavenging or inhibition of leukocyte activation in the reperfused intestinal tissues.

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DIETARY PHOSPHATIDYLCHOLINE PROTECTS AGAINST INFLAMMATORY ACTIVATION IN EXPERIMENTAL COLITIS IN THE RAT

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Introduction: Local increase in mucus phosphatidylcholine (PC) content may decrease inflammatory activity in ulcerative colitis patients (Stremmel W et al., Gut 2005).

Objectives: Our aims were to characterize the anti-inflammatory properties of oral PC treatment regimens in acute and resolving phases of a rodent model of 2,4,6-trinitrobenzene-sulfonic acid (TNBS)-induced colitis.

Materials & methods: In series I rats were monitored 1 day after colitis induction, while in series II on the 6th day following TNBS enema. In both series the animals were randomized to colitis, control or colitis with PC-pretreatment groups (n=6, each). In the acute series PC-pretreated animals received 2% PC-enriched diet for 6 days before TNBS enema, and for 3 days before and 3 days after TNBS treatment in series II. Pro-inflammatory cytokines (TNF-alpha, IL-6) were measured in plasma, the severity of colonic mucosal damage was monitored with *in vivo* confocal laser endomicroscopy. FITC-dextran iv was used to evaluate the microvascular structure and topical acridine orange was applied to observe the mucosal architecture.

Results: Cytokine levels were significantly elevated in both series with colitis. Disruption of the capillary network and lack of epithelium were observed in series I (score: 7.0), while morphological damages were moderate in series II (score: 4.3). The PC-pretreatment decreased significantly the cytokine levels and histological scores in both series (acute phase: 4.0; resolving: 1.33) and increased the number of mucus-producer goblet cells in the resolving phase.

Conclusion: PC-pretreatment is able to inhibit the progression of inflammatory changes in colitis through decreasing the cytokine levels and preserving the epithelial structure.

ALPHA5-INTEGRIN AND ITS LIGAND, THE ONCOFETAL FIBRONECTIN (EDA*FN) ARE DIFFERENTIALLY EXPRESSED IN PSORIATIC UNINVOLVED AND HEALTHY SKIN

K. Vas¹, B. Guban Konczné¹, A. Bebes¹, B. Kormos², N. Belso¹, R. Kui¹, M. Széll², L. Kemeny^{1,2}, Z. Bata-Csörgő^{1,2}

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Introduction: To better understand the pathomechanism of psoriasis we compared gene and protein expression responses to mechanical stress in psoriatic uninvolved and in healthy skin. Previously we found striking differences between psoriatic uninvolved and healthy skin in Keratinocyte Growth Factor (KGF), Keratinocyte Growth Factor-Receptor (KGFR) mRNA and protein levels, indicating abnormal skin homeostasis in the disease.

Objectives: In this work we studied the effect of mechanical stress on the expression of $\alpha 5$ -integrin and its ligand the oncofetal fibronectin (EDA*FN).

Materials & methods: We applied tape stripping on uninvolved skin of psoriatic patients and on normal skin of healthy subjects. Real-Time RT-PCR and immunofluorescent staining were carried out to detect mRNA and protein expressions in treated and non-treated skin samples.

Results: Both the alpha5-integrin and EDA*FN protein expressions were elevated in psoriatic uninvolved skin even without tape stripping. Tape stripping induced the expressions of alpha5-integrin and EDA*FN mRNAs both in psoriatic uninvolved skin as well as in healthy skin, similarly. We detected enhanced alpha5-integrin and EDA*FN protein expressions after tape stripping in both psoriatic uninvolved skin and healthy skin, the increase in protein expressions was higher in the psoriatic uninvolved tissue.

Conclusion: These data confirm that abnormalities exist in the psoriatic uninvolved skin which can contribute to disease pathomechanism.

MELANOMA CELL-DERIVED EXOSOMES ALTER MACROPHAGE AND DENDRITIC CELL FUNCTIONS IN VITRO

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Introduction: Previous studies showed that cultured human tumor cell lines release exosomes, i.e., microvesicles of 20-100 nm diameters, bearing molecular markers of the tumor cells' plasma membrane. The immunomodulatory activities of tumor exosomes are poorly understood, with reported activating and inhibitory effects.

Objectives: We used B16F1 melanoma cell derived exosomes (mcd-derived exosomes) to clarify immunogen properties of them.

Materials & methods: We tested how mcd-exosomes influence the CD4⁺ T cell proliferation induced by bone marrow derived allogeneic dendritic cells; we quantified the NF- κ B activation in mature macrophages stimulated with mcd-exosomes, and compared the cytokine profile of LPS-stimulated and mcd-exosome treated macrophages.

Results: We observed that mcd-exosomes helped the maturation of dendritic cells, and they also activated macrophages, as measured by NF- κ B activation. Compared to macrophages activated by LPS, the cytokine profile of mcd-exosome activated macrophages showed a type 2 bias.

Conclusion: Taken together, we demonstrated that melanoma derived exosomes interact with macrophages as well as dendritic cells, although the mixed biological effects observed in our experiments may contribute not only to anti-tumor immune response but also to tumor immune escape. The fact that, in the absence of therapeutical interventions, the tumor microenvironment harbors mostly type 2 tumor associated macrophages and suppressive dendritic cells indicates that melanoma derived exosomes might typically skew the balance in the direction of immune suppressive mechanisms.

NEONATAL BLUE LIGHT PHOTOTHERAPY AND MELANOCYTIC NEVI: A TWIN STUDY

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Introduction: Blue light phototherapy has been widely and successfully used for the treatment of neonatal jaundice to reduce the plasma concentration of bilirubin and hence to prevent kernicterus. Only a few and controversial data are available in the literature as to how neonatal blue light phototherapy influences melanocytic nevus development.

Objectives: Our aim was to perform a twin study to evaluate the effect of neonatal blue light treatment on nevus development.

Patients & methods: Fifty-nine monozygotic and dizygotic twin pairs were enrolled into this cross-sectional study. One of the twin members received, whereas the other did not receive neonatal phototherapy. The density of melanocytic skin lesions and the prevalence of benign pigmented uveal lesions was evaluated. A standardized questionnaire was used to assess data relating to constitutional, sun exposure and other variables. To search for possible gene-environmental interactions involved in the appearance of pigmented lesions, MC1R variants and the I439V polymorphism of HAL genes were also determined in the enrolled twins.

Results: Neonatal blue light phototherapy was associated with a significantly higher prevalence of both cutaneous and uveal melanocytic lesions. No association was found between the examined gene polymorphisms and the number of pigmented alterations in the study group.

Conclusion: Our data suggest that neonatal blue light phototherapy could well be a risk factor for melanocytic nevus development. Phototherapy with blue-light lamps is a standard and essential therapeutic modality in neonatal care; therefore, additional in vivo and in vitro studies are necessary to establish its potential long-term adverse effects.

INTERLEUKIN-1 RECEPTORS ARE DIFFERENTIALLY EXPRESSED IN NORMAL AND PSORIATIC LYMPHOCYTES

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Introduction: Psoriasis is a common inflammatory skin disease. Psoriatic plaque formation is initiated and maintained by components of the skin innate and acquired immune system. Our previous results show that regulatory T cells are functionally defective in psoriasis; however, the reasons are unknown.

Objectives: In this study we investigated the possible role of interleukin-1 receptors in psoriasis pathogenesis with emphasis on regulatory and effector T cells.

Patients & methods: Effector (CD4⁺CD25⁻ Teff) and regulatory (CD4⁺CD25⁺CD127⁻ Treg) T cells were isolated from normal and psoriatic blood. Expression of type 1 (signal-transmitting) and type 2 (decoy) interleukin-1 receptors, and IL-1R antagonist (IL-1RN) mRNAs were determined by real-time RT-PCR. Surface, intracellular and soluble protein expression was investigated by flow cytometry and ELISA.

Results: The proportion of regulatory, memory, naive and naive Treg cell population within the T cell pool is similar in psoriatic and healthy individuals in peripheral blood. Members of the interleukin-1 receptor family are differentially expressed in psoriatic and normal peripheral blood T cells. The naive T cell population (both Tregs and Teffs) express higher levels of the functional and decoy IL-1 receptors than normal cells. Furthermore, our results provide additional information on effector/regulatory T cell characteristics, showing that there are fundamental differences between the expression of the transmitting and decoy IL-1 receptors on Treg and Tef cells.

Conclusion: Our data suggest that differential expression of genes in the interleukin-1 pathway in normal and psoriatic T lymphocytes may result in functional differences in these cells, and may have a role in psoriasis pathogenesis.

COP1, A P53 INTERACTING PROTEIN, IS STRONGLY EXPRESSED BY PROLIFERATING KERATINOCYTES, ITS EXPRESSION DECREASES AS CELLS DIFFERENTIATE AND AFTER UVB IRRADIATION

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Introduction: UVB irradiation has been shown to trigger a broad range of changes in gene expression in human skin; however, factors governing these events are still not well understood.

Objectives: In this study, we investigated changes in the human constitutive photomorphogenic protein (huCOP1), which is an E3 ligase, and the human analogue of Arabidopsis thaliana (AtCOP1), the negative regulator of plant photomorphogenesis.

Materials & methods: Our data show that huCOP1 protein is expressed both in the nucleus and cytoplasm of cultured keratinocytes, UVB reduces the levels of the huCOP1 mRNA and protein, and induces changes in the subcellular localization of huCOP1 protein.