

This Issue at a Glance

In August 2007, the third meeting of the International Society of Skin Physiology (ISP) was held in Washington, D.C., as an interactive forum, together with other organizations like EPA, FDA, NIOSH, WHO and CFTA. The results of this successful meeting will be published in a special issue of our journal.

The topics of the present issue are related to the investigation of the barrier properties of human skin.

Wartewig and Neubert (Skin Pharmacol Physiol 2007; 20: 220–229) described in their review paper the properties of ceramides and their impact on the stratum corneum structure. It was shown by several transport studies that the lipid matrix is the major diffusion-rate-limiting pathway by which most drugs intracellularly pass the stratum corneum. The major lipid classes that can be extracted from the stratum corneum are ceramides, cholesterol and long-chain free fatty acids. A profound knowledge of the physical properties of ceramides is essential for a deeper understanding of the impact of each ceramide species on the barrier function. The review summarizes the thermotropic and/or lyotropic behavior of sphingosine-type and phytosphingosine-type ceramides, revealed by differential scanning calorimetry, X-ray diffraction, Fourier transform infrared spectroscopy and Fourier transform Raman spectroscopy in past decades.

The permeation of the skin changes tremendously if the barrier is disturbed, as in atopic dermatitis, psoriasis and during chemotherapy. The influence of a disturbed skin barrier in the case of atopic dermatitis on the permeation of topically applied substances was investigated by Simonsen and Fullerton (Skin Pharmacol Physiol 2007; 20: 230–236). They developed an *in vitro* skin permeation model simulating atopic dermatitis skin. By applying 25 tape strips to otherwise healthy skin, it was possible to induce a skin barrier impairment, simulating the barrier properties of atopic dermatitis skin evaluated by transepidermal water loss. The skin permeation results obtained correlated with clinical findings. Thus, the application of the model in early stages of product development makes it a valuable tool for predicting the clinical efficacy of dermatological products for atopic dermatitis.

Bonnekoh et al. (Skin Pharmacol Physiol 2007; 20: 237–252) reported on topo-proteomic *in situ* analysis of psoriatic plaque under efalizumab treatment. Six psoriatic patients were treat-

ed over 12 weeks with efalizumab targeting the CD11a subunit of LFA-1. Skin biopsies were taken before and after efalizumab treatment and subjected to multi-epitope ligand cartography robot microscopy. The results give an insight into the skin dynamics of a broad diversity of inflammatory epitope collocations under efalizumab treatment of psoriasis.

Cancer patients undergoing chemotherapy frequently experience skin problems such as sensitiveness. Fluhr et al. (Skin Pharmacol Physiol 2007; 20: 253–259) verified whether concomitant treatment with an acidic washing and emollient system can significantly improve the quality of the skin in such patients. It was found that the controlled and regular use of an acidic skin care system improved skin physiology in patients undergoing chemotherapy.

The permeation of the skin barrier can be influenced by topically applied formulations. In the literature, it has been reported that emulsions generally enhance skin penetration of drug molecules compared to simple solutions, due to the relative increase of the active ingredient concentration in the dispersed phase. Izquierdo et al. (Skin Pharmacol Physiol 2007; 20: 263–271) investigated the influence of emulsion droplet size on the skin penetration of tetracaine by assessing dermal and transdermal tetracaine delivery from emulsions differing only in the droplet size and in droplet size and overall surfactant concentration. In contrast to the literature, where reports were based on the comparison of emulsions from different systems, components and compositions, no evidence has been found in this study for the enhancement of the skin penetration of tetracaine by the reduction of the droplet size in the emulsions into which it was incorporated.

Over the past few years, several novel, selective anticancer agents have been produced. One potentially new therapeutic target in oncology is the epidermal growth factor receptor (EGF-R). Cetuximab is a member of a new family of antineoplastic agents that inhibit the EGF-R. Gencoglan and Ceylan (Skin Pharmacol Physiol 2007; 20: 260–262) observed new secondary side effects and reported two cases of acneiform eruption induced by an inhibitor of the EGF-R. They found that the cutaneous adverse effects of cetuximab are similar to other EGF-R-targeted agents and result from direct interference with the functions of EGF-R signalling in the skin.

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