

Poster: free communications

## Protective effects of herbal cosmetic ingredients assessed in cell and tissue cultures and in human studies

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Herbal ingredients are preferentially used in cosmetic formulations intended for consumers with sensitive or dry skin, with the aim to improve skin condition and appearance. They are reported to promote physiological functions of the skin and may offer a balanced complex of health effects as moisturizing, free radical scavenging, calming and anti-inflammatory, improving skin elasticity, anti-aging, healing sunburn or chemical induced irritation (Leung and Foster, 2003).

The study was focused on the significance of addition of selected herbal ingredients, used in formulations of cleaning products in order to minimize possible adverse irritative effects of tensides, e.g. Sodium Dodecyl Sulfate (SDS).

The protective effects of selected active ingredients were tested *in vitro* in the cell culture of 3T3 fibroblasts and in the human reconstructed skin model (EpiDerm™, Mattek, USA), and subsequently evaluated *in vivo* by testing in a group of volunteers by means of a closed epicutaneous patch test according to COLIPA Guidelines (COLIPA, 1997). The advantage of *in vitro* systems for prediction of biological effects in human practice was examined.

Protective effects against SLS cytotoxicity were proved in the cell culture of 3T3 fibroblasts in case of a number of natural substances, e.g. Green Tea, Aloe Vera, Pronalen Sunlife, Pronalen Cereal, Pronalen Sensitive Skin and Chamomile. The effects of the most promising substances were subjected to further testing in the 3D human skin model. Results from the *in vitro* systems were compared to results obtained by means of an epicutaneous test in a group of human volunteers. All the selected herbal substances, in accordance with results obtained *in vitro*, exhibited protective effects against SDS-induced skin irritation in human volunteers. The highest degree of protection *in vivo* was proved for Chamomile and Green Tea in all recorded times of assessment.

The *in vitro* test systems were found to be a useful tool for screening of biological effects and represent a valuable tool for safety and efficacy testing of cosmetics before skin testing in human volunteers is performed.

### References

- Encyclopedia of Common Natural Ingredients Used in Food, Drugs and Cosmetics* (2003). A. Y. Leung and S. Foster (eds). Hoboken, New Jersey: John Wiley & Sons, Inc.
- Product Test Guidelines for the Assessment of Human Skin Compatibility* (1997). Bruxelles: COLIPA (COLIPA = The European Cosmetic Toiletry and Perfumery Association).

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