

# Abstracts

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### Safety Aspects of the Sunscreen Products Use

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Sunscreen products are the important part of the cosmetic market. UV filters are used in sun care products, as well as in used every day personal care cosmetics. UV filters are also important in professional cosmetics, and cosmetic dermatology, used for skin protection after invasive treatments. Sunscreens should mainly protect skin against photoaging and DNA damage, which may cause skin neoplasm. Sun care products should also protect against skin irritation – an effect of UVB radiation. High value of the protection factors of sunscreen is associated with high concentration of organic filter that sunscreen product contains. Alternatively the inorganic sunscreen – micronized pigments, especially Titanium Dioxide may be used. Unfortunately, both organic filters and micropigments, may cause side effects in human. Organic filters (e.g. hydroxyl benzophenone derivatives) are supposed to have estrogenic activity. Affinity of those substances to estrogen receptor is weak; nevertheless they can be dangerous, especially in children. Another problem is photostability of UV filters. Knowledge on structures, properties of the UV filters decomposition products of is still inadequate. Micropigments also may undergo changes when

exposure to UV radiation. On the surfaces of micropigment active centers may be formed. Thus, such ingredient may act as sensitizer. Insufficient stability of the products, cause by catalytic activity of micropigment, or reaction between ingredients of the cosmetic product also may occur. Coatings of micropigments with inert films may eliminate such activity. Side effect of sunscreens are not proven, parallel there are evidential negative UV effects in human. Furthermore there are not alternative methods of protection against UV radiation. Because of that we are made to use of UV filters, micropigments, not 100% safe, but only ones that may protect us before UV.

### Nanotechnology And Wellness

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The new frontier of material research have been taken, probably, the more high level by the development of material systems made up of components with nanoscale dimensions and by the availability of technologies allowing the tailoring of material structure at the nanoscale. Thus many research centres, for example, are focusing their studies on developing new knowledge-based multifunctional surfaces and materials with tailored properties and predictable performance, for new products and processes targeting a wide range of applications, such as human tissue like physical and mechanical behaviour.

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## Oral Suncare And Photoprotection With Carotenoids

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The normal Western population is increasingly exposing itself to natural and ambient sources of UV-radiation (UVR) due to a lifestyle favouring tanned skin. Chronic exposure to UV radiation leads to epidermal and dermal damage, such as hyperkeratosis, keratinocyte dysplasia and dermal elastosis in affected skin areas, clinically presenting as photoaged skin. To limit the adverse effects of excessive sun exposure, nutritional manipulation of basic skin endogenous protective properties is an attractive proposition. There has been considerable interest in the dietary carotenoids for many years, due to their radical scavenging and singlet oxygen quenching properties and thus their putative role in photochemistry, photobiology and photomedicine. Carotenoids are natural pigments commonly found in brightly coloured vegetables and fruit. Carrots, apricots and green leafy vegetables such as spinach contain mainly  $\beta$ -caroten and the carotenoids lutein and zeaxanthin. Tomatoes contain high levels of lycopene. More recently, carotenoids have received increasing interest as beauty supplements for oral sun care. Carotenoids protect skin from sunlight damage in several ways, including: increasing optical density, quenching singlet oxygen or, for provitamin A carotenoids, formation of retinoic acid, a known topical therapeutic for premature skin aging. Over the past 30 years, a considerable body of evidence has emerged from human, animal and in vitro skin cell studies on the protective effects of carotenoids, demonstrating that they can mildly alleviate sun burn, photo-immune suppression and reduce molecular markers for

photoaging. This research is summarized in this review, and new molecular mechanisms, recently identified by nutrigenomics tools, are discussed.

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## The Efficacy Of Commercial Sunscreens With The Same SPF By In Vitro Method

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The objective of this study was to present as distinctive are the overall sun protective abilities of the commercially available sunscreen cosmetics in European market with the same SPF value labelled. For this purpose, UVA and UVB absorbance, the UVA/UVB ratio, critical wavelength and photostability of the eleven sunscreen products with SPF 20 were investigated by in vitro spectrophotometry test. The method was based on the assessment of UV-transmittance through a thin film of sunscreen' sample that was spread on a quartz substrate, as the spectral absorption before and after exposure from xenon lamp as a defined UV artificial source. The nine sunscreens offered only partial protection against UVA radiation, particularly in UVA-I spectrum. The eight sunscreens have been providing insufficient photostability.