

〈シンポジウム〉

(Evidence にもとづく化粧品を求めて—化粧品はどこまでバリア機能を制御できるか?)

紫外線によるバリア機能低下メカニズムとその制御の可能性

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Mechanism of Skin Barrier Dysfunction Caused by Ultraviolet Rays Irradiation and the Possibility of Controlling the Impairment

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Abstract

The stratum corneum plays a very important role in maintaining skin barrier function. The components of the stratum corneum are altered by external factors such as temperature, humidity, chemicals, oxidation and ultraviolet (UV) rays and internal factors such as aging. We found that chronic low-dose UV irradiation decreases the barrier function and water-holding capacity in the stratum corneum and also induces alteration of the components. Exposure of hairless mice to a 1/3 minimal erythral dose (MED) of UV induced many changes in the stratum corneum of the skin: increase of transepidermal water loss, decrease of water content, increase in the number of layers, changes in the keratin patterns, immaturity of the cornified envelope, decrease of amino acid content, structural changes in intercellular lipids, and downregulation of filaggrin gene expression. These epidermal changes remained after UV irradiation was stopped. These findings suggest that chronic low-dose UV irradiation induces metabolic changes in the epidermis. We would like to discuss the possibility of controlling the impairment.

Key words: barrier function, stratum corneum, ultra violet rays, differentiation.