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バリア機能のメカニズムと化粧品とのかかわり方

芋川玄爾*

Barrier Mechanisms and its Association with Cosmetics

Genji IMOKAWA*

Abstract

Barrier function which resides in the stratum corneum of the epidermis plays an important role in protecting the skin from penetration of environmental substances, or infection by epidemic bacteria. However, because the phenotype of barrier disruption on the skin is not easily detectable, it remains obscure as to what skin troubles are attributable to the barrier defect. In this review, *in vivo* methodology for evaluating barrier function is described to understand causative factors which induce barrier disruption and the effect of barrier replenishing substances such as synthetic ceramides. The methods include TEWL, riboflavin technique, nicotinic acid technique and photoacoustic spectrometry (PAS). Recently, several lipids other than free ceramide have been implicated to serve as barrier modulator and are particularly associated with UVB-induced barrier disruption. These include covalently bound ceramide and glucosylceramide, the diminishment, or increment of which is generated by down-regulated activity of transglutaminase, or beta-glucocerebrosidase, respectively. In addition to UVB irradiation, surfactants are potent barrier and water disrupting agents in human life activities and these disrupting effects are evoked mainly by its ceramide depleting potential rather than its amino acid releasing ability. The highest frequency of association with barrier function in cosmetic field occurs in so-called sensitive skin where the barrier function evaluated by TEWL as well as PAS is slightly but significantly impaired, leading to the lowered current perception threshold (CPT) evaluated by Neurometer. The cutaneous features in the sensitive skin resemble those of atopic dermatitis with mild severity. It is likely that skin care products appropriate for atopic dermatitis which generally possess barrier replenishing potential are also applicable to the sensitive skin. Thus, barrier function has become an essential factor in consideration of cosmetic preparation with high quality in cosmetic field.

Key words: barrier function, ceramide, surfactants, sensitive skin, atopic dermatitis.