

〈一般論文〉

Interleukin-37 の表皮における炎症抑制機能の解析

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Analysis of Anti-Inflammatory Function of Interleukin-37 in Epidermis

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Abstract

In human skin, inflammatory cytokines such as interleukin (IL)-1 α and IL-1 β are produced in keratinocytes by the stimulation of ultraviolet rays, and inflammation is induced. Suppression of inflammation is important in whitening because keratinocytes during inflammation produce melanocyte-stimulating factors such as endothelin-1 and prostaglandin, which lead to the formation of spots. Recently, IL-37 has been reported as an anti-inflammatory cytokine. IL-37 suppresses the release of inflammatory mediators such as inflammatory cytokines and plays a role as an inflammatory inhibitor within an organism. However, the function of IL-37 in human skin has not yet been fully elucidated. Therefore, we investigated the functions of IL-37 in the epidermis. First, we examined the localization of IL-37 in human skin by immunohistochemistry. IL-37 was detected in the granular layer of the epidermis in normal human skin. Next, we investigated the anti-inflammatory function of IL-37 in epidermis by using human keratinocyte cell line HaCaT. As a result, IL-37 significantly suppressed the increase in mRNA expression levels of inflammatory cytokines, melanocyte-stimulating related factors due to UVB irradiation. Furthermore, we also investigated the effects of UVB irradiation on IL-37 mRNA expression and protein level. UVB irradiation suppressed significantly both IL-37 mRNA expression and protein level. From the above results, it was suggested that IL-37 is expressed in the stratum granulosum of the human epidermis and has a function of suppressing the inflammatory reaction in the skin, and also suppresses the production of melanocyte-stimulating factors through that function. However, it was considered that the inflammatory resistance of IL-37, which is inherent in the skin, is reduced by the influence of UVB. In order to suppress skin inflammation and prevent the formation of spots, it is important to recover the decrease of IL-37 due to the effects of UVB and enhance the natural inflammatory resistance in one's skin.

Key words: IL-37, inflammation, spots, keratinocyte, UVB.