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〈教育セミナー〉

表皮機能の新展開

表皮保湿因子とその機能；とくにフィラグリンを中心に

須賀　康

Current Topics on Filaggrin; Especially Dryness Protection and Moisturization in the Stratum Corneum of Epidermis

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Abstract

The major role of the skin is to provide a barrier between the potentially hostile external environment and the organism. Filaggrin (filament aggregating protein) is a key protein in the formation of the outermost protective barrier, which prevents water loss and blocks entry of infectious and allergenic agents. Profilaggrin is the major component of keratohyalin granules in the granular cell layers. During epidermal terminal differentiation, the 400 kDa profilaggrin polyprotein is dephosphorylated and rapidly cleaved by serine proteases to form monomeric filaggrin (37 kDa), which binds to and condenses keratin fibers in the lower cornified layers. In the upper cornified layers, filaggrin protein is citrullinated, and promotes its unfolding and further degradation into hygroscopic amino acids, which ultimately constitute natural moisturizing factors. The unique N-terminal domain of profilaggrin contains an S100-like calcium-binding domain and seems to be associated with the apoptosis pathway in the transitional layers of epidermis. Recent studies reported that specific filaggrin mutations are associated with ichthyosis vulgaris and atopic dermatitis. Therefore, filaggrin mutations seem to contribute to the skin barrier defects in such diseases and lead to aberrant immune responses.

Key words: filaggrin, profilaggrin, natural moisturizing factor, ichthyosis vulgaris, atopic dermatitis.