Abstracts

Background: Serine proteases have important roles in skin barrier function and desquamation, and the aberrant expression or the dysfunction of serine proteases is associated with the pathogenesis of skin diseases. Serine protease activities are tightly regulated by serine proteases such as kallikrein-related peptidases (KLKs) and serine protease inhibitors such as lympho-epithelial Kazal-type related inhibitor (LEKTI). For a better understating of diseases' pathogenesis, the regulation mechanism of serine proteases and the inhibitors' expression in epidermal keratinocytes must be clarified.

Objectives: To investigate the effects of the cytokines on the expression of LEKTI in epidermal keratinocytes.

Methods: Normal human epidermal keratinocytes (NHEKs) were stimulated with panels of inflammatory cytokines. The expression of serine protease inhibitors was analyzed using quantitative real-time PCR and ELISA. LEKTI expression in normal human skin and lesions from psoriasis or atopic dermatitis (AD) were analyzed by immunohistochemically and tape-stripping. Trypsin- and chymotrypsin-like serine protease activities in culture supernatants were measured by using specific substrates.

Results: TNF-α and IL-17A significantly induced the expression of LEKTI in NHEKs. The immunohistochemical and tape-stripping analysis revealed that psoriatic skin lesions had higher LEKTI expression compared to normal skin and AD lesions. Trypsin- and chymotrypsin-like protease activities in the culture media were upregulated 3-5 days later but attenuated 6-7 days later period by these cytokines.

Conclusions: In epidermal keratinocytes, the Th1&Th17 cytokines TNF-α and IL-17A induce the expression of serine protease inhibitor LEKTI, and it might occur to suppress the increase in the serine protease activities under inflammation.

Keywords: lympho-epithelial Kazal-type inhibitor, serine protease inhibitor, TNF-α, IL-17A, epidermal keratinocyte