

## **Effect of topical steroid on the stratum corneum compositions by using confocal Raman microscopy**

**Hideaki Tanizaki**

*Department of Dermatology, Osaka Medical College*

Stratum corneum (SC) is important to maintain the skin surface humidity and barrier function. Recent progress in confocal Raman spectrometer has enabled us to noninvasively assess the concentration of water, natural moisturizing factor (NMF) and lipids of the SC in vivo. Topical steroid has been widely used for a variety of skin inflammatory diseases including atopic dermatitis, but the effect on the SC compositions has not been elucidated yet. We sought to evaluate the effect of topical steroid on the profiles of SC of mouse and human skin. We evaluated the SC components of the skin of healthy donors, atopic dermatitis (AD) patients, C57BL/6 mice, and filaggrin knockout mice in the presence or absence of topical steroid treatments using a confocal Raman spectrometer. The depth-dependent profiles of SC were calculated from the respective spectra. Ceramide, pyrrolidone carboxylic acid, urea, and lactic acid, of AD patients were significantly decreased compared to healthy donors. In addition, long-term topical steroid treatment decreased the profiles of SC components in human. Consistently, SC components were lower in Filaggrin knockout mice when compared to C57BL/6 mice, and even after by topical steroid treatment. In addition, the recovery of SC components after degreasing treatment was markedly delayed in the steroid application group. We have demonstrated that topical steroid treatment decreased the components of SC of the skin in mice and humans. Although topical steroids are beneficial for controlling skin inflammation, we need to consider the risk of barrier disruption.