

〈教育セミナー〉

ドライスキンのサイエンス～原点から最前線まで～

乳幼児の皮膚を観察する
—皮膚はどのように成長するのか—

宮内 勇貴

**Make an Observation about Neonatal and Infantile Skins:
How Does the Skin Continue to Develop and Reach Maturity?**

Yuki MIYAUCHI

Abstract

The neonatal and infantile skin is believed to be more sensitive to the environments than the adult skin. However, only a few data are available regarding the functions of infantile stratum corneum (SC) in association with their growth. We evaluated the SC functions of infants chronologically for one year, and analyzed variations of growth- and body site-dependent differences. Subjects were twelve Japanese infants aged three to thirty-one months. Skin capacitance, trans-epidermal water loss [TEWL] were measured every month for thirteen months. Our results indicate that skin capacitance and TEWL attained adult-like properties from 3 to 45 months after birth. There were considerable body site-dependent differences among these parameters during the development. Neonatal human skin is drastically exposed to a dry terrestrial environment at birth, and thus requires a permeability barrier that depends on stratum corneum (SC). Ceramides (CERs) are the major lipid component of the stratum corneum. Depletion of CERs induces skin dryness as well as the barrier disruption. CERs in the SC of ten Japanese infants aged four to thirty-nine months were analyzed and compared with those of the adults (their mothers' composition), SC samples from the infantile and the adult skin were obtained by tape stripping. CERs were extracted from these specimens and analyzed with normal-phase liquid chromatography-electrospray ionization-mass spectrometry (NPLC-ESI-MS). We found that the Cer [NS], Cer [EOS] and Cer [EOH] were more markedly expressed in the infantile SC, whereas the Cer [ADS] and Cer [AH] were expressed at lower levels, and Cer [AS] were expressed at higher levels than the corresponding ceramides from their mothers' SC. The average numbers of carbon atoms from the infantile SC ceramides were mostly but not unequivocally lower than those of their mothers' SC ceramides. Our results indicate the characteristic ceramide composition profiles in the infantile SC.

Key words: infant, stratum corneum, physical properties, growth, ceramide.