

Analysis of cell envelope for skin barrier function in Knockout mice

Kiyofumi Yamanishi

Department of Dermatology, Kyoto Prefectural University of Medicine

At the cell periphery of the stratum corneum is the cell envelope, a highly insoluble membranous structure composed of proteins polymerized via ϵ -(γ -glutamyl) lysine cross-linking. We generated mice with defective cell envelope by gene targeting for transglutaminase 1. The skin barrier function of TGase 1^{-/-} neonates, assessed by measurement of TEWL, by *in vitro* diffusion of mannitol, and by *in vivo* transdermal absorption of lucifer yellow, was markedly impaired, and these mice died within 4-5 h after birth. This knock-out study has clearly demonstrated that the cell envelope formation by TGase 1 gene is essential for maintenance of the skin barrier function.