

Functions of suprabasin in the formation of skin corneal barrier and development of metal allergy

Tetsuya Honda

Department of Dermatology, Hamamatsu University School of Medicine

Suprabasin (SBSN) is a secreted protein and a substrate for transglutaminase 2 and 3 activities. In the skin epidermis, SBSN is primarily expressed in the granular layer in both mice and humans. According to mouse studies, SBSN is suggested to play a role in the formation of the corneal barrier. Furthermore, *Sbsn*-deficient mice show increased allergic responses to nickel, indicating that SBSN plays protective roles in the establishment of metal allergy. However, the exact involvement and detailed mechanisms in humans remain largely unclear. To address these issues, we measured the amount of SBSN in the blood of nickel allergy patients. We also examined the involvement of SBSN in the skin corneal layer using a 3D-human skin equivalent model. The results indicate that SBSN concentration in the blood was significantly lower in nickel allergy patients than in non-nickel allergy patients. Knockdown of SBSN led to impaired corneal layer formation. Furthermore, SBSN knockdown keratinocytes showed increased IL-1beta production. These findings suggest that SBSN plays a physiological role in the formation of the skin corneal barrier and the development of nickel allergy.