

Epidermal homeostasis, including proper turnover of keratinocytes, plays important role in the barrier function and serine proteases and their inhibitors are the key players. Activated proteases cleave desmosomes in uppermost layer and thus shed the cells from the epidermal surface. Therefore the serine protease inhibitors are secreted in lower epidermal layers to prevent premature activation of proteases and consequent disruption of epidermal barrier. The most studied inhibitors in epidermis belong to Serine proteases inhibitors Kazal-type family (SPINK).

This diploma thesis is aimed to investigate function of murine SPINK6 in epidermal compartment *in vivo*. To achieve this, the transgenic mice overexpressing mSPINK6 under modified human involucrin promoter was generated. Two of five transgenic lines exhibited higher expression of mSPINK6 at mRNA and protein levels. The mSPINK6 transgenic mice are viable with no apparent phenotype. The small but in most cases not significant differences were observed on microscopic level among mSPINK6 transgenic and wild type animals

In conclusion, this work showed that mSPINK6 does not play major role in skin homeostasis but gains significant importance under specific challenges of epidermal barrier. Therefore mSPINK6 transgenic mice, in combination with other deletion or overexpressing models, represent useful tool for future studies.