Skin Care Product Applied onto an in vitro Epidermis Model of Dry Skin. Electron microscopical insights in the ultrastructure and visualisation of the lipid lamellae.

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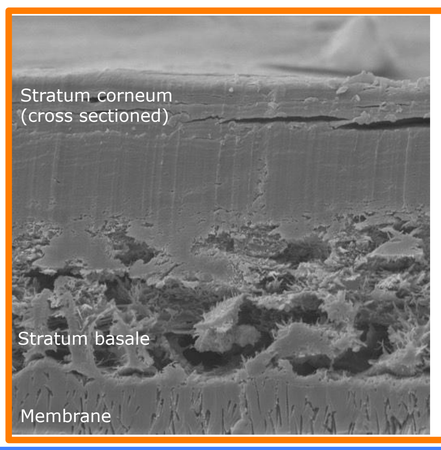
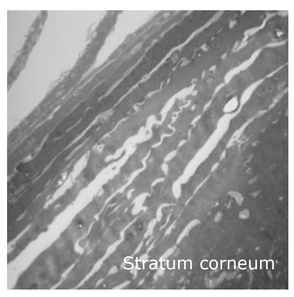
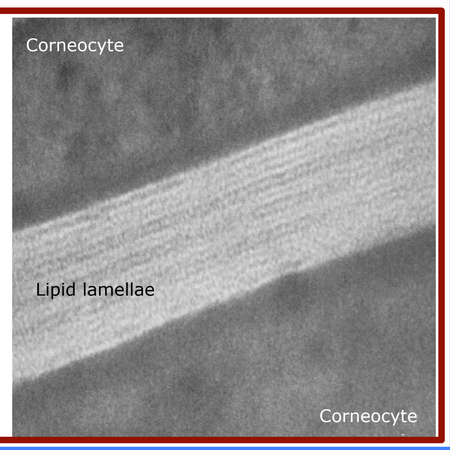
To generate ultrastructural features of dry skin in the stratum corneum (SC) of in vitro skin models, we developed a protocol applied to commercial in vitro epidermis models. The ultrastructure in the challenged in vitro epidermis models is comparabel with those in SC of human dry skin. The amount of lipid lamellae in the intercellular space of the in vitro epidermis model can be measured after transmission electron microscopically (TEM) investigation using the Lipbarvis technology.

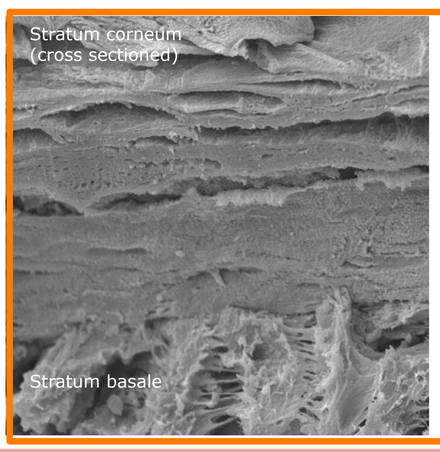
SEM and TEM images of untreated in vitro epidermis models

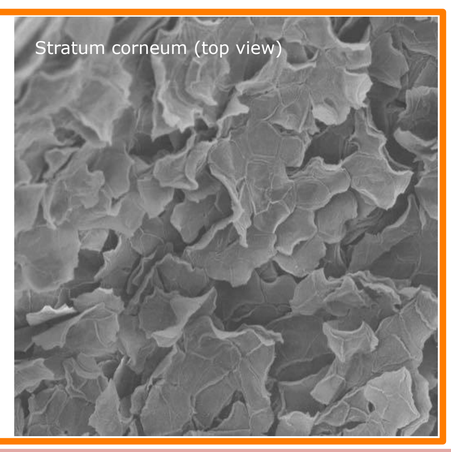


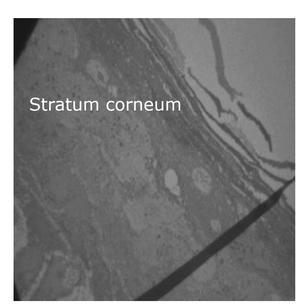


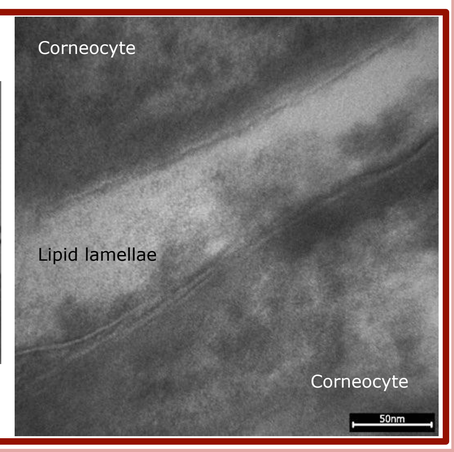


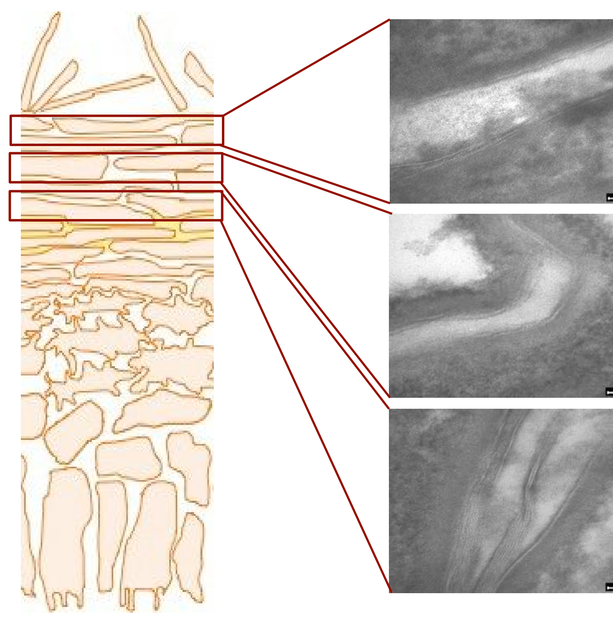
SEM and TEM images of SDS challenged in vitro epidermis models





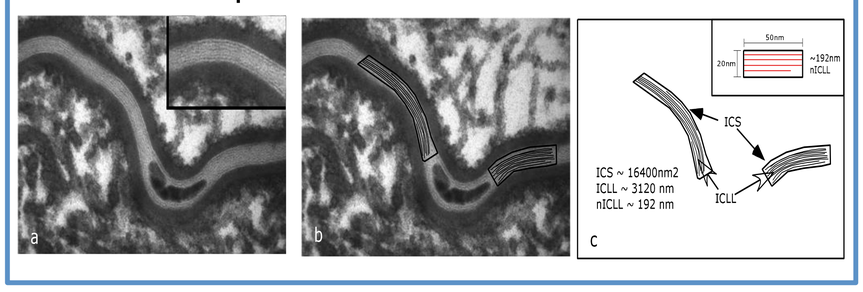




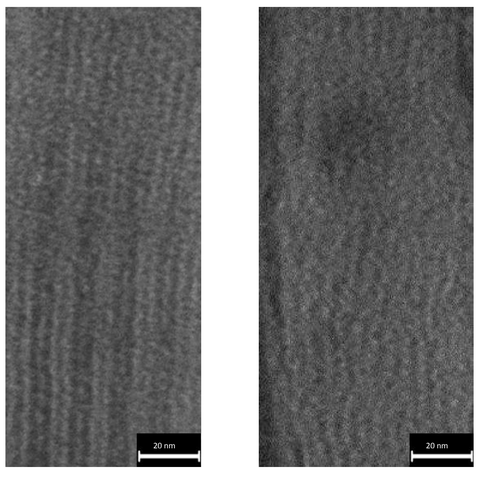


Two lamellar organized skin care products, differing in their lateral packing, were topical applied on the surface of the SDS challenged in vitro epidermis models. Samples were taken 30 min. and after 24h. TEM images and measurements of the amount of the lipid lamella in the intercellular space (ICS) of the corneocytes show differences in the penetration into the SC.

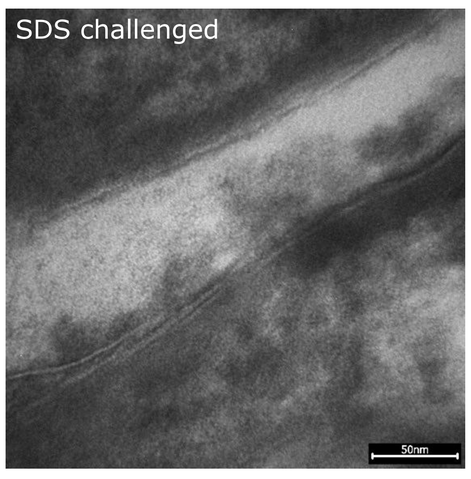
Method of Lipbarvis measurement

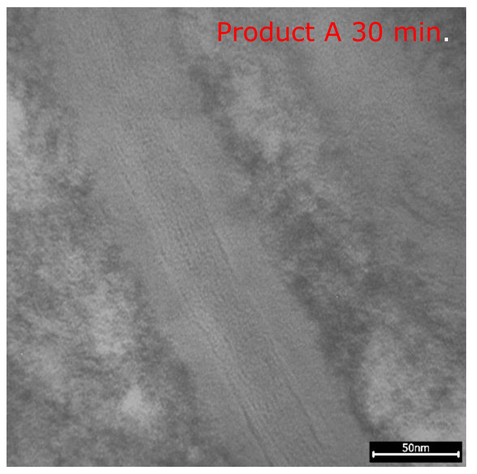


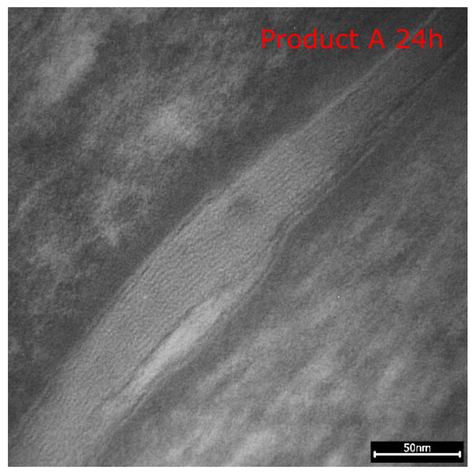
Lipid lamellae (HR-TEM)

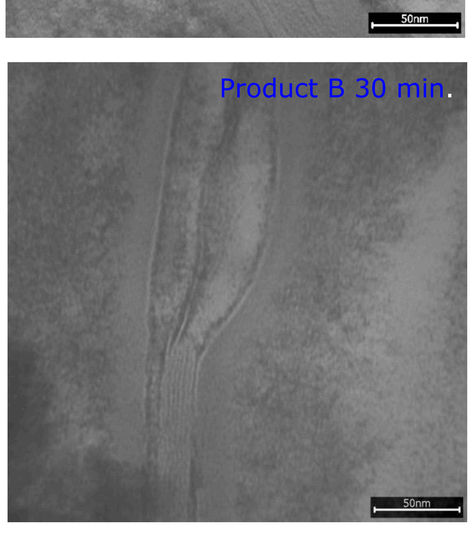


Unchallenged, challenged and treated









Results of Lipbarvis measurement

	healthy human skin	dry human skin	in vitro epidermis model	challenged epidermis model	treated challenged epidermis model (product A)	treated challenged epidermis model (product B)
length of lipid lamellae (nm / 1000nm^2 ICS)	≈200	≈90	≈280	80	≈ 278 30 min.	≈ 136 30 min.
					≈ 259 24 h	≈ 169 24 h