DERMAL ABSORPTION OF SILVER FROM A SILVER CONTAINING GARMENT IN HEALTHY CONTROLS AND PATIENTS WITH ATOPIC DERMATITIS (P169)

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Aim: To determine in vitro and in vivo percutaneous penetration of silver.

Methods: In in vivo study 15 healthy subjects and 15 patients with atopic dermatitis (AD) wore a sleeve containing 13% silver on their lower arms for 8 hours during 5 consecutive days. The percutaneous penetration has been determined from the silver concentrations in the stratum corneum (SC) layers collected by adhesive tape. Furthermore, silver was measured in urine samples collected before and after exposure. In vitro percutaneous penetration through human cryopreserved full thickness skin has been investigated by using a Franz diffusion cell. Silver material (1.77 cm2) was placed in the donor chamber filled with 1.5 mL of synthetic sweat. The receptor solution was collected at, 2, 4, 8, 16 and 24 hours of exposure. The concentration of silver in the SC, urine and receiving phase was determined by ICP-MS.

Results: Steady state flux in healthy subjects and AD patients was 0.2 ng Ag/cm2/h. There was no significant difference in dermal flux between AD patients and healthy subjects. Dermal exposure did not result in an increased levels of silver in urine.

In the in vitro study, the amount of silver that penetrated across the skin into receptor fluid was low and amounted 0.07 ng/cm2/h.

Conclusions: In vitro and in vivo study revealed low penetration of silver through the atopic and healthy skin. Dermal absorption of silver extrapolated to the ‘’in use’’ scenario was lower than the current reference dose for silver uptake.