Abstract:

BACKGROUND: Prior to the discovery of filaggrin (FLG) mutations, evidence for an impaired skin barrier in atopic dermatitis (AD) has been documented, and changes in ceramide profile, altered skin pH and increased trans-epidermal water loss (TEWL) in patients with AD have been reported. Until now, no studies have analysed stratum corneum (SC) lipids combined with skin barrier parameters in subjects of known FLG genotype.

METHODS: A cohort of 49 German individuals genotyped for the most common FLG mutations (R501X, 2282del4) had SC samples taken for lipid analysis by high-performance thin layer chromatography. In addition, TEWL, erythema, skin hydration and pH were measured. In 27 of the 49 individuals, a 24-h irritation patch test with sodium lauryl sulphate was performed. For the analysis, both the AD group and the control group were stratified by FLG mutation status (FLGmut/FLGwt). RESULTS: In the FLGmut AD group, significantly lower levels of ceramide 4 and significantly higher levels of ceramide 7 were observed when compared to both healthy control groups. However, ceramide 7 levels also significantly differed between FLGwt AD and FLGwt controls, as did ceramide 1 levels. No significant differences were observed for ceramide 2, 3, 5 and 6. FLGmut individuals had significantly higher skin pH values than individuals not carrying FLG mutations. Patients
with AD with FLG mutations had significantly higher erythema compared to patients with AD without FLG mutations. CONCLUSION: Our results confirm previous observations of altered ceramide levels in AD, which however appear to show no clear relationship with FLG mutations.

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