

Beyond Occlusion: Massage Oil Improves Stratum Corneum Hydration and Lipid Architecture

Poster
Nr. 17



Dr. Dorothee Dähnhardt¹, Stephan Dähnhardt-Pfeiffer¹, Inge Holland², Andrea Weymann², Dr. Peter Staib²

¹ Microscopy Services Dähnhardt GmbH, Flintbek, Germany ² Kneipp GmbH, Würzburg, Germany

Poster zum Download

BACKGROUND & OBJECTIVE

Evidence for oil-based skincare is still limited, particularly for ultrastructural effects on the stratum corneum. This study assessed whether a plant oil-based massage oil improves hydration and barrier-associated lipid architecture and composition versus untreated skin after standardized wash stress.

METHODS

Randomised, controlled, intra-individual study in 12 healthy participants (mean age 47 years). After 7 days of pre-treatment with an SDS-containing rinse-off cleanser, massage oil was applied twice daily to one forearm; the contralateral forearm remained untreated. Stratum corneum hydration was measured by corneometry. Lipbarvis® TEM quantified ultrastructural lipid organisation, and Lipbarvis® LIP assessed lipid composition.

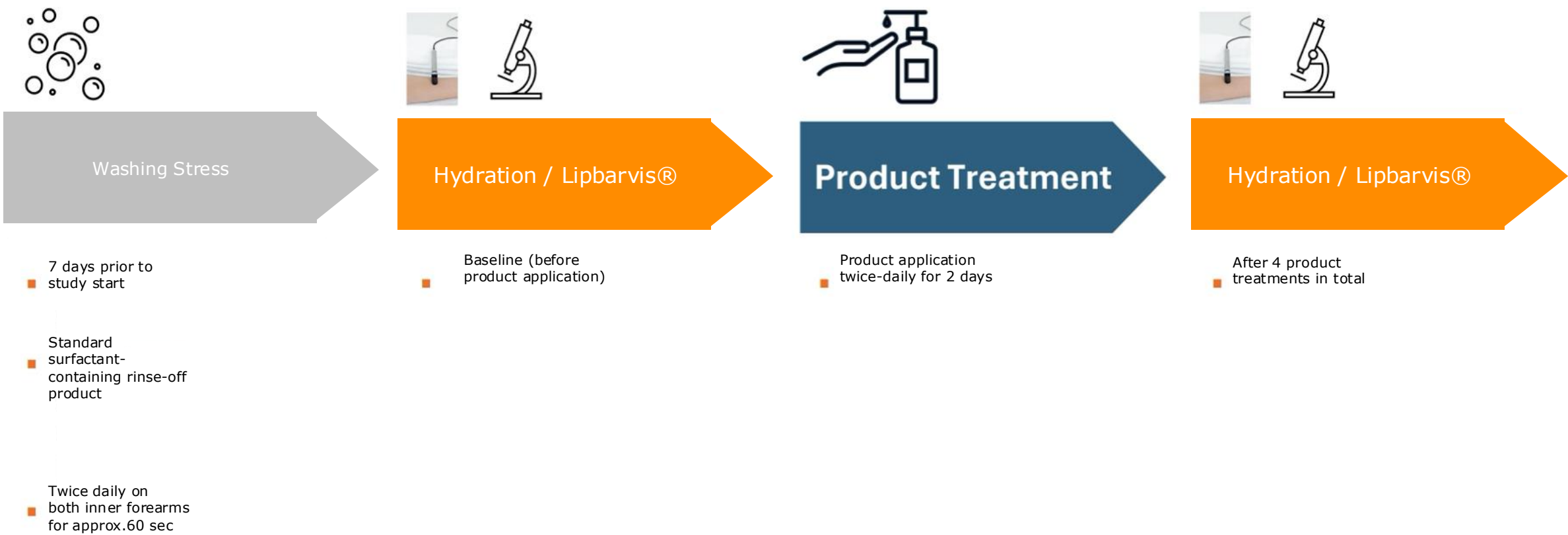


Figure 1. Study design: 7-day SDS wash stress, baseline assessment, unilateral massage-oil treatment and post-treatment corneometry/Lipbarvis® analyses.

RESULTS

At t1, the treated site differed from the untreated control as follows:

HYDRATION
+29.1% vs untreated
p < 0.001

INTERCELLULAR LIPID LAMELLAE
+116.6% vs untreated
p < 0.001

TOTAL LIPID CONTENT
+17.2% vs untreated
p < 0.001

Selected lipid species at t1 vs untreated: cholesterol +12% • free fatty acids +27% • ceramide EOS +17% • ceramide AP +15%.

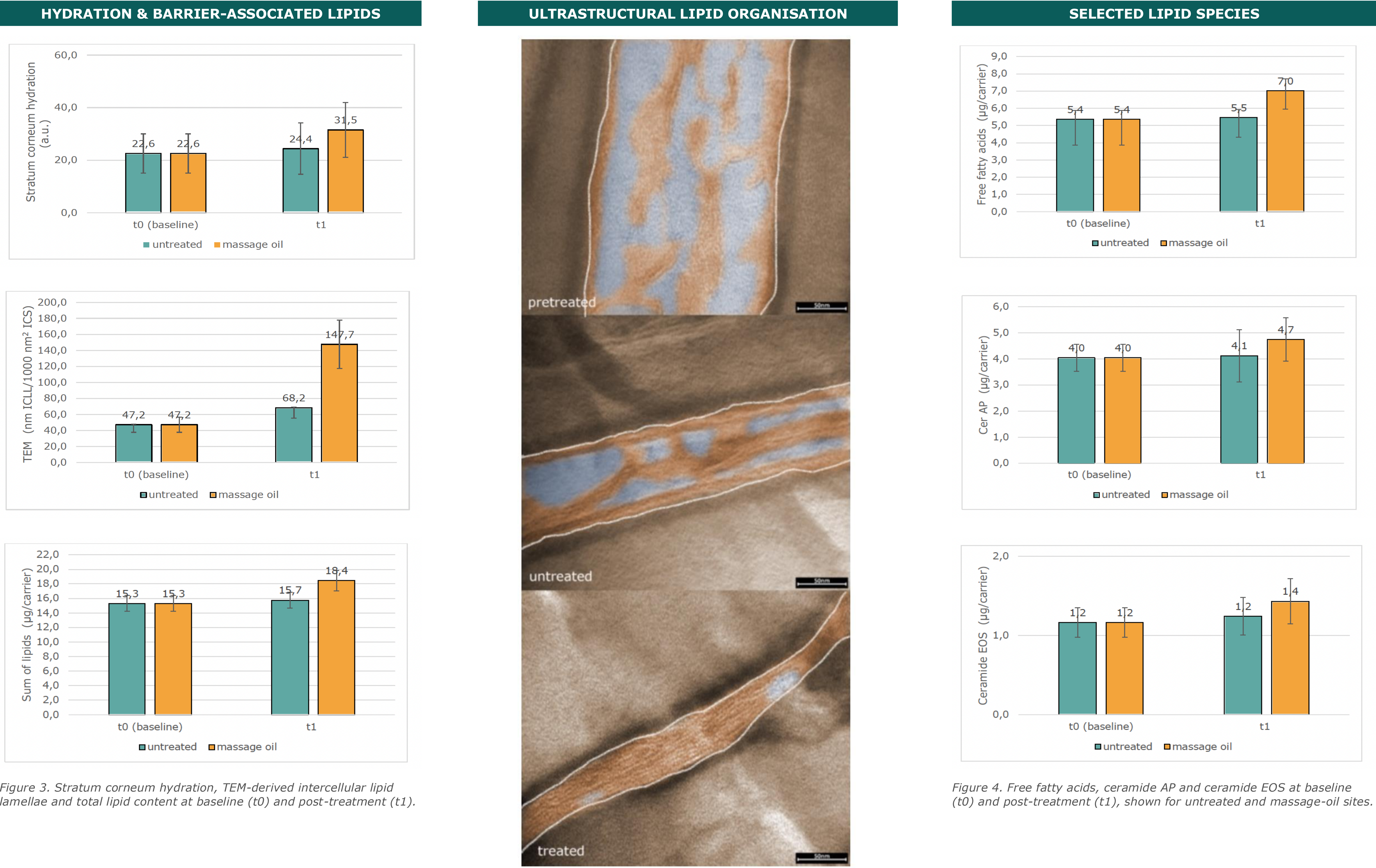


Figure 3. Stratum corneum hydration, TEM-derived intercellular lipid lamellae and total lipid content at baseline (t0) and post-treatment (t1).

Figure 2. Representative Lipbarvis® TEM images of the stratum corneum after wash stress (pretreated), at the untreated control site and after massage-oil treatment.

Figure 4. Free fatty acids, ceramide AP and ceramide EOS at baseline (t0) and post-treatment (t1), shown for untreated and massage-oil sites.

t0 = baseline; t1 = post-treatment. SDS = sodium dodecyl sulfate.

CONCLUSION

The plant oil-based massage oil increased stratum corneum hydration and was associated with pronounced increases in intercellular lipid lamellae and lipid content after wash stress. Combining Lipbarvis® TEM and LIP links hydration changes with ultrastructural and compositional barrier parameters.