

CAN THE SKIN MICROBIOTA OF PATIENTS SUFFERING FROM ATOPIC DERMATITIS BE MODIFIED AFTER BALNEOTHERAPY?

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OBJECTIVE

Among the 7561 patients treated in 2016 with balneotherapy at La Roche-Posay thermal center, 27% presented with eczema or atopic dermatitis (AD). The objective of this study was to evaluate the efficacy of a balneotherapy at the thermal care center of La Roche-Posay for patients suffering from atopic dermatitis and to assess their skin microbiota evolution.

METHODOLOGY

We assessed the evolution of skin microbiota in AD patients, before and after 3 weeks of balneotherapy including high pressure filiform showers, baths, facial and body spray treatments as well as La Roche-Posay thermal water consumption. Skin microbiota was sampled on one eczema lesion and one adjacent unaffected skin site on 35 atopic patients (31 ± 16 years old) to analyze microbiota diversity (Shannon Index), bacterial phyla and genus abundance as well as the severity of AD with SCORAD.

RESULTS

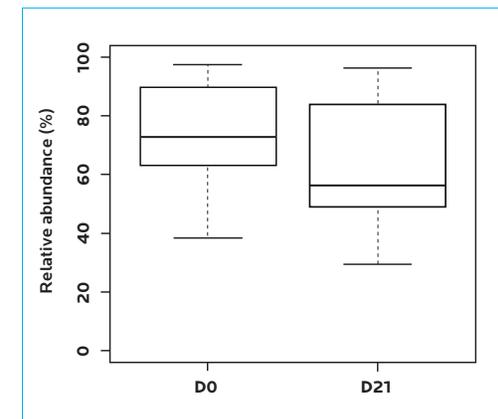
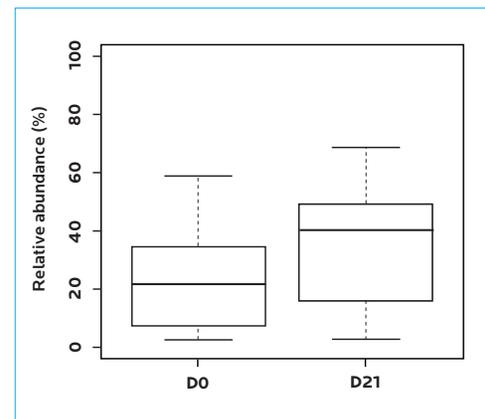
As previously shown, at the end of the balneotherapy period, the SCORAD improved from 54 ± 16 to 23 ± 10 (-56% in average)(1). At the bacterial level, before balneotherapy, the Shannon diversity index was lower on the affected skin compared to the adjacent unaffected skin (2.52 ± 0.41 vs 3.22 ± 0.32). Shannon index increased after balneotherapy and became similar on both areas (3.42 ± 0.33 vs 3.89 ± 0.26). In addition, after balneotherapy, the abundance of Firmicutes was reduced in both areas and other phyla increased. The decrease of Firmicutes was due to a significant reduction of Staphylococci in both areas. Lastly, an increase in the amount of Xanthomonas genus was also observed.

We noticed that balneotherapy had induced a significant increase of skin Gram-negative bacteria and a significant decrease of Gram-positive bacteria.

Relative abundance of Gram-negative (A) and Gram-positive (B) bacteria at the surface of affected and unaffected skin of patients affected by atopic dermatitis prior (D0) and post (D21) balneotherapy

A (Gram-negative (UAF+AF))

B (Gram-positive (UAF+AF))



For Gram-negative bacteria, Wilcoxon rank sum test with continuity correction ($W = 163.5$, $p\text{-value} = 0.06711$) and for Gram-positive bacteria Wilcoxon rank sum test with continuity correction ($W = 320$, $p\text{-value} = 0.06887$).

CONCLUSION

As previously demonstrated for patients with psoriasis (2), this study showed that patients presenting atopic dermatitis are significantly improved at the end of a 3-week balneotherapy at La Roche-Posay thermal care center. Reduced disease severity was associated with increase of microbiome diversity, reduction of *Staphylococcus*, increase of *Xanthomonas* genus, reduction of Gram-positive and increase of Gram-negative bacteria.

REFERENCES

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Average taxonomic composition (30 main genus) of the skin microbiome associated with AD prior (A) and post (B) balneotherapy associated with unaffected (UAF) and affected (AF)

