2023 Mar 3.
doi: 10.1007/s00484-023-02443-1. Online ahead of print.

Evaluation of the effects of Lake Hévíz sulfur thermal water on skin microbiome in plaque psoriasis: An open label, pilot study

Ágota Kulisch [1], Zsuzsanna Mándó [1], Enikő Sándor [1], Zsuzsanna Lengyel [2], Anett Illés [3], János Kósa [3 4 5], Kristóf Árvai [5], Péter Lakatos [3 4 5], Bálint Tóbiás [4 5], Márton Papp [6], Tamás Bender [7]

Affiliations expand

1. PMID: 36864227
2. DOI: 10.1007/s00484-023-02443-1

Abstract

Psoriasis is a chronic inflammatory skin disease. It is associated with changes in skin microbiome. The aim of this study was to evaluate how Lake Hévíz sulfur thermal water influences the composition of microbial communities that colonizes skin in patients with psoriasis. Our secondary objective was to investigate the effects of balneotherapy on disease activity. In this open label study, participants with plaque psoriasis underwent 30-min therapy sessions in Lake Hévíz, at a temperature of 36 °C, five times a week for 3 weeks. The skin microbiome samples were collected by swabbing method from two different areas (lesional skin-psoriatic plaque and non-lesional skin). From 16 patients, 64 samples were processed for a 16S rRNA sequence-based microbiome analysis. Outcome measures were alpha-diversity (Shannon, Simpson, and Chao1 indexes), beta-diversity (Bray-Curtis metric), differences in genus level abundances, and Psoriasis Area and Severity Index (PASI). Skin microbiome samples were collected at baseline, and immediately after treatment. Based on the visual examination of the employed alpha- and beta-diversity measures, no systematic difference based on sampling timepoint or sample location could be revealed in these regards. Balneotherapy in the unaffected area significantly increased the level of Leptolyngbya genus, and significantly decreased the level of Flavobacterium genus. A similar trend was revealed by the results of the psoriasis samples, but the differences were not statistically significant. In patients with mild psoriasis, a significant improvement was observed in PASI scores.