

Antibacterial properties of alpine origin: Sodium bituminosulfonate light is effective against *Corynebacterium minutissimum* and other pathogen bacteria

Lisa Bäumer (1,2), Flavia Stal Papini (1), Anna-Lena Zodel (3), Annette Sethmann (3)

(1) MyMicrobiome GmbH, Bamberg

(2) Professur für Mikrobiologie, Friedrich-Alexander-Universität, Erlangen-Nürnberg

(3) Ichthyol-Gesellschaft, Hamburg

Increasing antibiotic resistance continues to limit the available treatment options for bacterial infections emphasising the importance of identifying alternative antibacterial agents.

An example is the skin infection erythrasma where therapeutic options are decreasing due to developing antibacterial resistance in the underlying pathogen *Corynebacterium minutissimum*.

The aim of this study was to find out whether the active ingredient sodium bituminosulfonate light is effective against *Corynebacterium minutissimum*, in addition to other dermatologically relevant bacteria. Sodium bituminosulfonate light is extracted from sulfur-rich oil shale rock.

Due to its anti-inflammatory and antibacterial properties this extract is used for the treatment of localised bacterial skin infections amongst others.

For antimicrobial susceptibility testing (AST), the minimum inhibitory concentration (MIC) was determined by broth microdilution method. A bacteriostatic and even a bactericidal effect against *C. minutissimum* was confirmed (MIC= 0.25 µg/µl, MBC=0.5 µg/µl). This result is consistent with the MIC values of sodium bituminosulfonate when used against other clinically relevant microorganisms (MRSA: 0.125 to 0.25 µg/µl, MSSA: 0.06 to 2 µg/µl, *S. pyogenes*: ≤ 0.015 to 0.03 µg/µl). In contrast, the antibacterial effect against gram-negative bacterial strains is significantly weaker (MIC: 64 to >256 µg/µl). In summary sodium bituminosulfonate light is effective against pathogenic dermatological microbes, such as *Corynebacterium minutissimum*, Staphylococci or Streptococci and extends therapeutic options by offering an effective alternative to topical antibiotics.

