

## **Lysozym and natural extracts as mouthrinsing solutions against oral bacterial biofilm**

Isabelle Krehbiel, Matthias Hannig

Clinic of Operative Dentistry, Periodontology and Preventive Dentistry, Saarland University, Homburg, Germany

**Aim:** Subject of the study was to test lysozyme, oleic acid and hops in form of mouth rinsing solutions for their antibiofilm efficacy in vivo.

**Material and methods:** Lysozyme (1.4 mg/ml), oleic acid and hops were tested. Biofilm was generated in situ on bovine enamel and dentin specimens fixed on upper jaw acrylic splints and worn for 48 hours by three subjects. The mouth was rinsed using the particular test substance three minutes after splint insertion and again every six hours. A water control served as reference with an identical test set-up. Bacterial colonization and viability of the biofilms were analyzed using transmission electron microscopy, scanning electron microscopy and fluorescence microscopy.

**Results:** In case of lysozyme, none of the used methods showed any significant changes when compared to the control. Neither the thickness, viability, nor the extent of bacterial biofilm showed an effective antibacterial potency. A strong antibacterial effect of hops extract was demonstrated with all analytical methods used. For oleic acid, a clear shift towards dead bacteria was determined, whereas the biofilm thickness and the bacterial morphology were similar to those of the control.

**Conclusion:** Lysozyme mouth rinsing solution (1,4 mg/ml) showed no antibiofilm effect, whereas hops was demonstrated to possess promising antibacterial properties.