

0528 The Effect of Polihexanide on Dental Biofilm Formation In Vivo

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Objectives: Polihexanide (PHMB) is a widely used topical antimicrobial agent. Medical applications are wound coatings, wound rinsing solutions, antiseptic treatment of the eye and abdominal lavage. The aim of this study was to evaluate the effect of PHMB as mouthrinse on the de novo dental biofilm formation in vivo.

Methods: In a double-blind randomized controlled clinical study the effect of the PHMB containing mouthrinse solution (Prontolind®) on biofilm formation was compared to the efficacy of 0.2% chlorhexidine rinse (CHX) as positive control and to 0.9% saline solution (NaCl) as negative control. Six volunteers wore intraoral splints supplied with standardized sterile human enamel coupons for biofilm generation for 96h. They rinsed their oral cavity twice daily for 30s. Sampling points were after 24h, 48h, 72h and 96h. The biofilms were characterized by evaluating the microbial vitality using fluorescent dyes that labelled vital and dead bacteria. Furthermore, the %-surface area coverage of the enamel slides with biofilm was monitored.

Results: The mean vitality was reduced to 31% (24h) and 26-34% (48-96h) after PHMB application compared to 33% (24h) and 23% (48-96h) following CHX rinsing. In contrast the control rinse with NaCl resulted in a higher vitality of 65-70% (24-96h). Microbial colonization of the sample surfaces after PHMB rinsing showed surface area coverage of 20% (24h) and 11-18% (48-96h). CHX use reduced the colonization to 10% (24-48h) and 21-30% (72-96h). During saline application the colonization with dental biofilm increased constantly from 48-64% (24-48h) to 80% (72-96h).

Conclusion: The application of the PHMB formulation used as mouthrinse showed a similar antivital effect and reduction of the de novo biofilm formation in the oral cavity over a test period of 4 days compared with CHX which still is considered the antibacterial gold standard.

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