

Effects of aging on surface properties and adhesion of *Streptococcus mutans* on various fissure sealants.

[Bürgers R](#), [Cariaga T](#), [Müller R](#), [Rosentritt M](#), [Reischl U](#), [Handel G](#), [Hahnel S](#).

Department of Prosthetic Dentistry, Regensburg University Medical Centre, 93042, Regensburg, Germany, ralf.buergers@klinik.uni-regensburg.de.

The aim of the present study was the quantification of *Streptococcus mutans* adhesion on ten widely used pit and fissure sealant materials and the correlation of these findings to surface roughness (R (a)) and surface free energy (SFE). Additionally, changes in streptococcal adhesion and surface parameters after water immersion and artificial aging have been investigated. Circular specimens of ten fissure sealants (seven resin-based composites, two glass ionomers, and one compomer) were made and polished. Surface roughness was determined by perthometer and SFE by goniometer measurements. Sealant materials were incubated with *S. mutans* suspension (2.5 h, 37 degrees C), and adhering bacteria were quantified by using a biofluorescence assay in combination with an automated plate reader. Surface properties and *S. mutans* adhesion were measured prior to and after water immersion after 1 and 6 months and after additional thermocycling (5,000 cycles; 5 degrees C/55 degrees C). The tested sealants showed significant differences in *S. mutans* adhesion prior to and after the applied aging procedures. Aging resulted in slight increases (mostly <0.2 mum) in surface roughness, as well as in significant decreases in SFE and in significantly lower quantities of adhering bacteria. Ketac Bond and UltraSeal XT plus revealed the lowest adhesion potential after artificial aging. In general, the amount of adhering *S. mutans* was reduced after aging, which may be related to the decline in SFEs.

PMID: 19234725 [PubMed - as supplied by publisher]