

Review of: "Relationship between In Vitro Physical Properties and In Situ Biofilm Formation of Fissure Sealants"

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Potential competing interests: No potential competing interests to declare.

This two-part study aimed to explore the impact of surface properties of different dental sealant materials on in situ biofilm formation. The first part involved laboratory analysis of microhardness, surface roughness, and contact angle of four materials (two resin sealants, a glass-ionomer sealant, and a biomimetic hydroxyapatite) compared to human enamel. The second part consisted of placing three fissure sealant samples and BHAP blocks on the upper removable appliances of 20 children to allow in situ biofilm formation over two weeks. In the second week, a hydroxyapatite paste was applied to the materials.

The results indicated significant differences in surface roughness among the dental materials. Microhardness varied between the materials, with the glass-ionomer sealant exhibiting statistically different values compared to the others. Additionally, the glass-ionomer sealant showed higher contact angle measurements than the other materials. In terms of in situ biofilm formation, the glass-ionomer sealant had the highest biofilm formation, while the biomimetic hydroxyapatite had the lowest, although the difference was not statistically significant. However, the use of the hydroxyapatite paste led to a significant reduction in biofilm formation across all groups.

In summary, the study found that surface roughness correlated with biofilm formation on the tested materials, and the application of the hydroxyapatite paste contributed to decreased biofilm formation. These findings suggest potential implications for the development of dental sealants and preventive strategies for biofilm-related oral health issues.