

Surface properties and in vitro streptococcus mutans adhesion to self-etching adhesives.

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PURPOSE: The aim of this in vitro study was to investigate the surface properties and in vitro adhesion of *Streptococcus mutans* to dental self-etching two-step adhesives using an artificial mouth system. **MATERIALS AND METHODS:** Carriers of a denture base resin supplemented with hydroxyapatite were manufactured, polished, and surface treated with various two-step self-etching dental adhesives (Clearfil Protect Bond, Silorane System Adhesive, Adper Scotchbond SE) according to the manufacturers' instructions. For each adhesive, 14 samples were inserted in an artificial mouth system and successively rinsed with mucin solutions (2 h) and *Streptococcus mutans* NCTC 10449 suspension (4 h). Surface free energy of the specimens was determined before and after mucin coating. The amount of adhered bacteria was quantified using a fluorescent dye (Resazurin/Alamar Blue) for viable cell quantification. **RESULTS:** Before mucin coating, significant differences in surface free energies were found between the various adhesives, with total surface free energies ranging from 34.26 mJ/m⁻² to 42.30 mJ/m⁻². Mucin coating clearly levelled surface free energy differences. Significantly lower fluorescence intensities, indicating lower adhesion of *Streptococcus mutans*, were found for Silorane System Adhesive than for Clearfil Protect Bond and Adper Scotchbond SE, regardless of mucin coating. **DISCUSSION:** The findings of this in vitro study indicate that the initial adhesion of *Streptococcus mutans* is lower to Silorane System Adhesive than to Clearfil Protect Bond or Adper Scotchbond SE. Our data correlated with the common thermodynamic approaches explaining streptococcal adherence to solid surfaces.