

Adhesion of *Streptococcus mutans* to various dental materials in a laminar flow chamber system.

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Newly developed dental materials have to be tested for their susceptibility to adhere bacteria causing caries and periodontitis. The objective of this study was to establish an in vitro laminar flow chamber assay for dental material evaluation with regard to the adhesion of oral bacteria. Test specimens of commonly used dental materials (ceramic (five brands of ceramics, n = 15/brand), composite (eight brands of composites, n = 15/brand), and alloy (two brands of alloys, n = 15/brand) specimens) were inserted in a laminar flow chamber system and rinsed with artificial saliva (2 h) and *Streptococcus mutans* NCTC 10,449 suspension (4 h) successively. The amount of adhered bacteria was quantified using a Resazurin reduction assay (Alamar Blue). Statistical analysis was performed using the Mann-Whitney U-test ($\alpha = 0.05$). Regarding adhesion of *Streptococcus mutans*, significant differences between the various material classes were found. Highest fluorescence values (ranging from 973 to 3145), correlating with high bacterial adhesion, were found on composite samples, and lowest values (173-272) were found on the alloys. Ceramic specimens showed an intermediate adhesion of *Streptococcus mutans* (fluorescence values from 532 to 1326). *Streptococcus mutans* NCTC 10449 adhered differently to the various classes of dental materials. The established laminar flow chamber device provides a suitable method for evaluating the adhesion of oral bacteria to dental material surfaces. 2007 Wiley Periodicals, Inc.

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