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Streptococcal adhesion to various luting systems and the role of mixing errors.

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Objective. This study aims at ranking various luting systems according to their susceptibility to adhering Streptococcus mutans and at evaluating the influence of incongruent mixing ratios on adhesion quantities. Material and Methods. Circular specimens measuring 8 mm in diameter were made of nine widely used dental cements-three of them mixed in different ratios-and then incubated with S. mutans. Adhering streptococci were quantified using a biofluorometric assay in combination with an automated plate reader for cell quantification. Surface roughness (R(a)) was determined by perthometer measurements. Results. Meron plus revealed the highest R(a) (0.90 microm) and glass the lowest R(a) (<0.01 microm). In regular cement mixtures, the highest mean fluorescence intensities indicated the presence of many viable bacteria [Meron Plus (35,533 relative fluorescence units (rfu)), Maxcem (13,374 rfu), and Panavia F 2.0 (11,701 rfu)]. Moderate fluorescence intensities were found in Harvard (4,171 rfu), Ketac cem (3,766 rfu), Durelon (3,276 rfu), Calibra (3,259), Rely X Unicem (4,358 rfu), and Bifix SE (3,102 rfu). A medium correlation between R(a) and S. mutans adhesion was found. Changes in regular cement proportions (powder/liquid and base/catalyst, respectively) had a significant influence on relative fluorescence intensities, which linearly increased with a higher proportion of liquid in Harvard and with a higher proportion of catalyst in Calibra and Maxcem. Conclusions. Various luting systems revealed considerable differences in their potential to adhere S. mutans. Variations from recommended cement proportions led to significant changes in the amount of adhering streptococci.

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