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Experimental one-step self-etch adhesives and bonding to caries-affected dentin

Leina Nakanishi, C P Isolan, C Cuevas-Suárez and R R Moraes
University of Pelotas, Brazil

This study evaluated the shear bond strength (SBS) of experimental one-step self-etch adhesives containing three different concentrations of acidic monomer (GDMA-P) to sound dentin (SD) and caries-affected dentin (CAD). Microcosm biofilms were formed over dentin discs and cultivated under anaerobic conditions for 14 days. A biofilm model was used with intermittent availability of 1% sucrose in a culture medium for 4 hours daily. Six groups were defined by different GDMA-P concentrations (5%, 20% and 35%) and dentin type. Bovine dentin discs for each group (n=10) were included in acrylic resin and the adhesives were applied. An elastomer mold with cylindrical orifices (1.5 mm diameter) was used to obtain two cylinders of composite resin on the surface. After 24 hours, the cylinders were subjected to SBS test in a mechanical testing machine. Data were analyzed by ANOVA and Student-Neuman-Keuls test (5%). Failure modes were observed under magnification. SBS results were statistically different between substrates. Mean±standard deviations to sound dentin (MPa) were: 5.62 ± 1.90^{AB} (5%), 4.82 ± 2.3^{B} (20%), 6.41 ± 1.91^{A} (35%) and to caries-affected dentin were: 3.81 ± 1.46^{B} (5%), 5.91 ± 1.55^{A} (20%) and 3.52 ± 1.3^{B} (35%). The group of 20% GDMA-P showed higher bond strength to caries-affected dentin than sound dentin. In all the groups adhesive failures were predominant.

Biography

Leina Nakanishi has completed her graduation from Federal University of Pelotas, Brazil. She is currently pursuing PhD at the School of Dentistry, Federal University of Pelotas, Brazil in Dental Materials.

leinaa_@hotmail.com

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