

Effect of a Dental Water System Maintenance Additive on Bond Strength of a 7th-generation Bonding Agent

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Purpose – The study compared the bond strengths of a 7th-generation bonding agent on tooth tissue prepared using distilled water versus distilled water mixed with *Team Vista*TM (*Hu-Friedy*), an irrigation system additive.

Materials and Methods – The irrigation system additive (*Team Vista*, *Hu-Friedy*) was prepared as directed by mixing it with distilled water according to the manufacturer’s instructions and also in a double-strength version. The two versions were applied to separate sets of human dentin specimens ground with 600-grit SiC paper. A third set of specimens was prepared with only distilled water as a control. A 7th-generation bonding agent (*OptiBond All-In-One*, *Kerr Corporation*) was applied to the three sets of dentin specimens followed by the fabrication of a composite cylinder (*TPH3*, *DENTSPLY Caulk*) on top of the coated dentin. The cylinder was 2.38-mm in diameter. Bond strength was tested using the Ultradent shear bond strength jig. All specimens were stored in water at 37°C for 24 hours before testing. Testing was performed on a universal test machine (Instron 5866) at a crosshead speed of 1 mm/minute. Means (n=5) and standard deviations of bond strength were calculated. Data were analyzed by analysis of variance at the 0.05 level of significance.

Results – Means and standard deviations of bond strength are listed in the table. Analysis of variance showed there were no statistical differences (p=0.5) among the three groups.

Table: Means with standard deviations and ranges of bond strength of 7 th -generation bonding agent and composite under three conditions.		
Treatment	Bond Strength, MPa	Adhesive Failure, %
Distilled water (control)	37.7 (4.9) [32.5-44.6]	93
Team Vista – standard concentration	39.1 (4.0) [34.3-44.8]	94
Team Vista – double concentration	41.1 (4.6) [36.0-46.0]	92

Conclusions – *Team Vista*, in concentrations up to double the concentration recommended by the manufacturer, has no statistically significant effect on the bond strength of a 7th-generation bonding agent (*OptiBond All-In-One*) to ground, human dentin.