

Influence of Dental Unit Waterline Biocides On Dentin Bond Strengths. E. Ghaname, A. Ritter and R. H. Leonard*. University of North Carolina School of Dentistry, Chapel Hill, NC

Objective: One approach to control dental unit waterline contamination by microorganisms is the addition of chemical biocides to the treatment water. The purpose of this *in vitro* study was to evaluate the influence of biocides on composite to dentin bond strengths. **Methods:** The labial surface of 150 human teeth was ground flat to expose dentin and polished with wet 240-, 400-, and 600-grit silicon carbide abrasive paper. The solution used during polishing corresponded to the biocide tested (n=30): distilled water (control), **Sterilox™ solution** (Ultradent), **ICX™ solution** (ADEC), 5.0 ppm sodium hypochlorite, and **MicroCLEAR™** (Rowpar Pharmaceuticals, Inc.). For each biocide-treated group, specimens were randomly assigned to 3 subgroups according to the adhesive used for composite bonding (n=10): PQ1 total-etch adhesive (Ultradent), Clearfill SE self-etching primer/adhesive (Kuraray), and an experimental self-etching adhesive, EXP self-etching primer (Ultradent). For the total-etch adhesive, the respective biocide was used to rinse the acid etch. Z-100 composite (3M ESPE) was bonded to each of the treated surfaces per manufacturer’s instructions using a specimen-forming matrix. Specimens were stored for 24h at 37°C and tested in shear to determine the bond strengths (SBS). The data was analyzed using two-way ANOVA (p=0.05). **Results:** Results are presented in the Table (mean ± SD, in MPa):

n=10	H ₂ O	Sterilox	ICX	NaOCl	M-CLEAR
PQ1	20.8 (2.9)	16.8 (2)	17.2 (5.2)	14.9 (4.9)	17.1 (2.6)
Clearfill SE	21.9 (6.6)	14.7 (5.7)	17.6 (5.4)	16.5 (7.1)	17.1 (6.3)
EXP	18.6 (6.6)	19 (2.7)	20.2 (5)	16.6 (6.4)	18.5 (5.3)

No statistically significant differences and/or interactions were observed between mean SBS of specimens treated with the adhesives and biocides tested (p≥0.05). **Conclusions:** **The tested biocides did not significantly influence composite-to-dentin bond strengths for the total-etch and the self-etching dental adhesives used in this study.**

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