1255 **Efficacy of a chlorhexidine based irrigant in controlling dental unit water system contamination.**

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Purpose: a) To study effects of a chlorhexidine based dental irrigant ***(Bio2000)*** on dental unit water system contamination and biofilm control, b) to compare the efficacy of ***Bio2000*** with other available methods of water system contamination and biofilm control. **Methods:** This study was conducted in vitro using an automated biofilm generator which simulated dental unit water systems in an average dental practice. Five study groups (each group consisting of 4 waterlines having natural mature biofilms) were used in this study. Group 1 used continuous infusion of ***Bio2000***. Group 2 used sterile water daily and ***Bio2000*** loaded overnight. Group 3 used sterile water with daily cleaning during the first 5 days followed by weekly cleaning with 5000 ppm NaOCl. Group 4 had no treatment and used tap water. Baseline, end of week 1 and end of week 6 line samples were harvested for qualitative assessment using Scanning Electron Microscopy (SEM). Daily water samples during the first 5 days followed by sampling twice weekly for 6 weeks were quantified by heterotrophic plate counts (HPC Samplers - Millipore). Absolute microbial counts were converted to $\log_{10}$ values. **Results:** Analysis of Variance (α=0.05) of the $\log_{10}$ values of effluent contamination are as follows:

Treatment	n	Mean Log	S.D.
Group 1	19	0.353	1.095
Group 2	19	0.789	1.312
Group 3	19	1.368	1.409
Group 4	19	4.463	0.121

Comparisons	Scheffe F-test	p-value
Group 1 vs. Group 3	5.539	<0.05
Group 1 vs. Group 4	90.698	<0.05
Group 2 vs. Group 4	72.444	<0.05
Group 3 vs. Group 4	51.410	<0.05

Scanning electron micrographs showed that groups 1, 2, and 3 controlled biofilm in the water lines. **Conclusion:** In this study, ***Bio2000*** used continuosly, overnight, or treating the system with 5000 ppm NaOCl was found to be effective in controlling water system contamination. SEM of the waterlines showed that continous, overnight use of ***Bio2000***, or weekly cleaning with 5000 ppm NaOCl can effectively control biofilm growth. **The study was supported in part by Diagnostic Sciences TAMUS - Baylor College of Dentistry, Infection Control Center - UTHSCSA, and Micrylium Laboratories.**