An in-vitro study of the effects of various disinfectants on prosthetic and surface materials

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ABSTRACT:

Objectives: This study assessed the effect of various disinfectants on several contaminated prosthetic and surface-covering materials. Methods: The efficacy of 6 disinfectants used at King Abdul-Aziz University, Jeddah, Kingdom of Saudi Arabia, on prosthetic and surface-covering materials, irreversible hydrocolloid and elastomer impression materials, wax, acrylic resin, metal, bench-covering material, and floor carpet. These materials were contaminated with Pseudomonas aeruginosa, Escherichia coli, and Staphylococcus aureus. Counts of viable bacteria on the materials was determined by incubated replica plating on blood agar plates at 5 minute intervals. A 3 way non parametric analysis of variance was used to evaluate the main effects and interactions of the disinfectants, bacteria, and materials.

Results: Statistical analysis showed that material, type of disinfectant, and interactions between material and bacteria were significant. Carpet has a significantly higher bacterial count than many other items ($P < 0.0001$) such as acrylic resin, irreversible hydrocolloid, chrome- cobalt casting, and laminated bench surfaces.

Conclusions: Quaternary ammonia compound and the tertiary ammonia phenol were the most effective disinfectants. Efficacy of the disinfectant depends partly on the bacteria used for contamination. Carpets in dental clinics showed high potential to retain microorganisms.