IDENTIFICATION AND SURVIVAL OF DISINFECTANT-RESISTANT BACTERIA IN THE DENTAL CLINIC

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Objectives: Removable surface-protecting disposable plastic barriers and disinfectant solutions are commonly used in dental clinics in order to sterilize surfaces and instruments from contaminations. In this study we isolated and identified 3 distinct bacteria from plastic barriers at the dental clinic, and compared the bactericidal effect of 5 different commercially available disinfectants on these bacteria.

Methods: After dental procedures, bacteria were collected from surface-protecting plastic barriers at the dental clinic. Bacteria were cultured aerobically on Trypticase Soy Agar plates at 37°C for 24hr, and 16S RNA analysis was used for the identification of 3 isolated and selected red, yellow, and white bacterial colonies. Bacteria were streaked on agar plates, exposed to the aerosol spray of Cavicide, Micrylium, OPTIM 33TB, UNISEPTA Plus and PureGreen-24 disinfectant solutions. Plates were incubated for 24hr to determine the extent of bacterial growth on the agar surface.

Results: Microscopic analysis demonstrated that the red colony was comprised of rod-shaped bacteria, while the white and yellow colonies were comprised of coccal-shaped bacteria. Using 16S RNA analysis, these three isolates were identified as Bacillus infantis, Staphylococcus haemolyticus and Pantoea calida, respectively. Interestingly, S. haemolyticus is an oral and skin bacterium, whereas the other two are non-oral airborne bacterial species. All the disinfectants efficiently killed B. infantis. However, S. haemolyticus survived the exposure to OPTIM and PureGreen-24. While exposure to Micrylium or UNISEPTA was highly effective in killing Pantoea calida, this bacterium was relatively resistant to Cavicide and OPTIM disinfectants. P. calida was the least susceptible to PureGreen-24 aerosol spray and demonstrated luxurious bacterial growth on the agar surface.

Conclusions: This study demonstrates that following dental procedures provided to patients, oral as well as and non-oral airborne bacteria could contaminate surfaces at the dental clinic. Furthermore, not all commercially available disinfectant solutions can sufficiently and effectively kill these contaminants. This abstract is based on research that was funded entirely or partially by an outside source: Sponsored in part by Pure Life

Keywords: Bacterial, Disinfection/sterilization, Effectiveness, Evaluation and Microbiology

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