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Optim 33TB Cleaning Study

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Purpose – The purpose of the investigation was three-fold:

1. Evaluate the ability of ***Optim 33TB*** to clean environmental surfaces coated with dried organic debris;
2. Compare the cleaning capability of the water-based, hydrogen peroxide-containing ***Optim 33TB*** with that observed for a surface disinfectant containing a high alcohol concentration; and
3. Investigate the ability of ***Optim 33TB*** to remove bacteria in organic debris on contaminated environmental surfaces.

Materials and Methods

Fresh ***Optim 33TB*** was used throughout the study. ***Optim 33TB*** disinfectant wipes also were prepared according to manufacturer's directions using canisters of dry towelettes and ***Optim 33TB*** liquid supplied by SciCan. Freshly collected heparinized whole blood was used as the organic debris challenge for environmental surfaces. A 24-hour bacterial culture of Staphylococcus aureus ATCC# 25923 was added to vials of blood to yield a final 1:10,000 dilution.

Tile Contamination and Wiping Procedures

Sheets of laminated countertop material were cut into 2 x 2-in squares and used as experimental environmental surfaces. Surfaces to be tested were prepared by pipetting 0.2 ml of contaminated blood onto the squares and spreading it with pre-moistened, cotton applicators. Wetted surfaces were allowed to air dry before assay. Next, coated squares were treated with a single spray of disinfectant, followed in 10 seconds by 5-6 wipes with sterile 2 x 2 in gauze. Other experimental squares were similarly treated using prepared ***Optim 33TB*** disinfectant wipes. Another commercially-available, tuberculocidal disinfectant containing 79% ethanol was used on other prepared counter squares. This was done to compare the cleaning efficiency of the water-based, hydrogen peroxide ***Optim 33TB*** with that observed for a high alcohol-containing disinfectant. Initial cleaning of blood-coated tiles was also assessed using distilled water to remove the bacterial/blood debris.

Replica Plating Procedure

Detection of viable bacteria present on the surface 3 minutes after the wiping procedure was determined by replica plating treated squares on tryptic soy agar plates and tryptic soy agar plates containing 5% sheep blood. Plates were incubated aerobically at 37 C for 24 hours before microbial growth was observed. Each test procedure was performed using 5 replications.

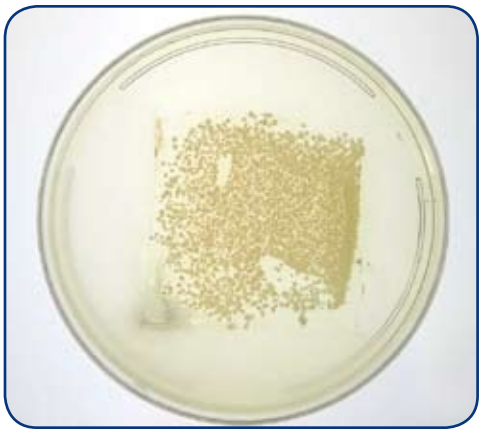

Figure 1 Lack of cleaning with high alcohol concentration disinfectant

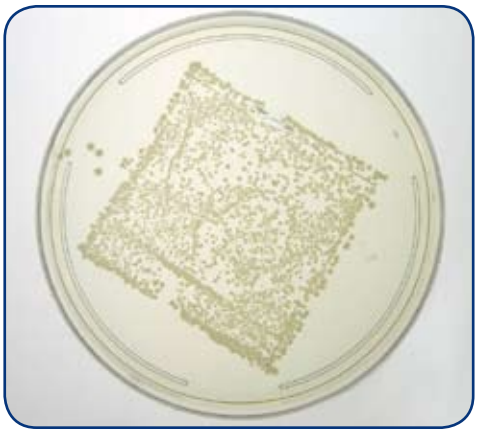

Figure 2 Water cleaning only

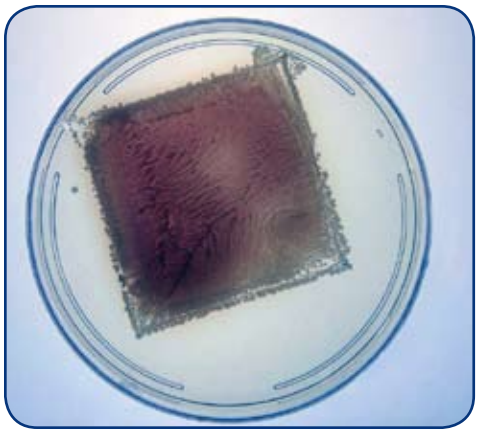

Figure 3 S aureus Blood Tile

Figure 4 ***Optim 33TB*** Spray Cleaning

Figure 5 ***Optim 33TB*** Wipes Cleaning

Results: Control, untreated tiles were replica-plated on agar plates to assess baseline bacterial concentrations in blood. These yielded confluent growth after 24 hour incubation. Both the ***Optim 33TB*** spray and prepared hydrogen peroxide wipes removed the overwhelming majority of dried blood from the tile surfaces in the wiped areas. Replica plating of those treated countertop squares further demonstrated a significant reduction in bacterial presence after cleaning with these products. Control tiles cleaned with water only also resulted in reduced organic burden and fewer remaining S. aureus colonies compared with the results from untreated tiles. In contrast, the spray and wipe procedure using a disinfectant containing 79% alcohol removed much less of the dried bacterial/blood debris from the surfaces.

Table 1. Bacterial Growth on Treated Countertop Squares	
Treatment	**Mean Colony Forming Units (CFU) [range]**
Control (untreated)	**Too Numerous To Count *(TNTC)**
Distilled water	**211 (117-400)**
***Optim 33TB* spray**	**75 (14-200)**
***Optim 33TB* wipes**	**7 (0-29)**
High Alcohol Disinfectant	**866 (760-1200)**

Conclusions: Based on this study evaluating the ability of surface disinfectants to remove dried blood and test bacteria in the presence of organic debris, water-based ***Optim 33TB*** was able to accomplish initial cleaning of contaminated prepared surfaces. Both the spray and towelette forms of this product were highly effective in removing the overwhelming majority of cultivable *S. aureus*.