Comparison of the Effectiveness of Alcohol-based and Alcohol-free Hand Sanitizers by Microbial Load Determination and Identification

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ABSTRACT

The use of hand sanitizers is popularly believed to protect consumers from microorganisms. The study compared the effectiveness of alcohol-based and alcohol-free hand sanitizers by pre- and post-treatment microbial load determination and identification. Swabbing procedure was performed on the hands of volunteer respondents prior to and after the application of the hand sanitizers. They were streaked on MacConkey Agar, Blood Agar and Chocolate Agar plates for the isolation and identification of microorganisms. The best time that the alcohol-based hand sanitizer inhibited the growth of microorganisms was within 5 minutes contact time while the alcohol-free hand sanitizer showed high variations of contact time. For alcohol-based hand sanitizer, 1093 ± 1096CFU/ml were counted prior to application and was reduced to 80 ± 147CFU/ml after application; whereas the alcohol-free has 467 ± 394 CFU/ml prior to application which was reduced to 163 ± 256CFU/ml after treatment. As for the identified organisms, Shigella species were the most frequently isolated bacteria (f=3/13 isolates) from alcohol based sanitizer – treated samples, while Pseudomonas/ Alcaligenes spp were most frequently isolated (f=11/31 isolates) from alcohol free sanitizer – treated samples. Statistical test showed that the significant difference in the level of microorganism before and after treatment was only observed in alcohol based sanitizer (p<0.05) and not in alcohol free (p>0.05). This shows that alcohol free hand sanitizer is not as effective as alcohol based hand sanitizers.

Keywords: Medical Laboratory Science, alcohol-based hand sanitizer, alcohol-free hand sanitizer, microbial load determination, microbial identification, Philippines