

EFFICACY OF ALCARE® VERSUS PATHOGENIC MICROORGANISMS USING A TIME KILL STUDY

PURPOSE

Alcare is a foamed, alcohol-based Surgical Scrub and Health Care Personnel Handwash which contains 62 percent ethyl alcohol, and emollients. Alcare provides both skin antiseptics and moisturizing simultaneously. Alcare can be used in a variety of ways. It may be used as a surgical scrub, as a health care personnel handwash, or as an adjunct step after a routine handwash when extra protection is desirable, or when handwashing facilities are not available. A time kill study was performed to demonstrate the antimicrobial efficacy of Alcare against a broad spectrum of American Type Culture Collection (ATCC) and clinical isolates of pathogenic microorganisms including methicillin resistant *Staphylococcus aureus* (MRSA) and vancomycin resistant *Enterococcus faecium* (VREF).

METHODS

For each isolate, greater than 10⁶ colony forming units (CFUs) were inoculated into 10 mL of liquefied Alcare. At various time intervals (1, 3, 5 minutes), 1 mL samples were removed into an adequate neutralizer. Neutralization is essential to stop the antimicrobial activity at exact time intervals. The number of viable organisms in both the original culture (baseline counts), and after exposure to Alcare was determined by a standard plate count method.

RESULTS

Against all of the isolates tested, Alcare demonstrated a total reduction in bacterial counts by the first sample time. Thus, for the initial level of organisms greater than 1 million CFUs, no detectable organisms remained following exposure to Alcare (detection limit <10 CFU/mL). The results are presented in Table 1.

Table 1: Alcare Efficacy vs Pathogenic Microorganisms

| Test Organism | ATCC Isolates | Clinical Isolates | *Log Reduction (at 60 seconds) | Percent Kill |
|---|---------------|-------------------|--------------------------------|--------------|
| <i>Staphylococcus aureus</i> | 1 | - | 7.8 | >99.999 |
| Methicillin Resistant <i>Staphylococcus aureus</i> (MRSA) | 3 | 5 | 7.6 | >99.999 |
| <i>Staphylococcus epidermidis</i> | 2 | 2 | 7.1 | >99.999 |
| <i>Streptococcus pyogenes</i> | 3 | 3 | 6.5 | >99.999 |
| <i>Enterococcus faecalis</i> | 4 | - | 6.9 | >99.999 |
| Vancomycin Resistant <i>Enterococcus faecium</i> (VREF) | - | 4 | 6.5 | >99.999 |
| <i>Escherichia coli</i> | 4 | 3 | 7.6 | >99.999 |
| <i>Klebsiella pneumoniae</i> | 4 | - | 7.7 | >99.999 |
| <i>Pseudomonas aeruginosa</i> | 4 | 4 | 7.8 | >99.999 |
| <i>Serratia marcescens</i> | 2 | 2 | 8.0 | >99.999 |
| <i>Candida albicans</i> | 4 | 4 | 6.3 | >99.999 |

*Complete Log Reduction observed at the first sample time. Detection limit <10 CFU/mL

CONCLUSION

Alcare demonstrates broad spectrum efficacy, and rapid kill. The complete kill observed in the time frame of 60 seconds is important to the intended use as a surgical scrub. Alcare has also demonstrated complete kill at 15 seconds for a similar broad spectrum of microorganisms supporting the health care personnel handwash claim. Skin drying, and irritation associated with higher concentrations of alcohol, have been minimized by the emollients included in the formulation of Alcare.

Reference

Research and Development Notebook No. 5280, pp 66-88

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