De Nardo E et al., J Infect Dis Ther 2018, Volume 6
DOI: 10.4172/2332-0877-C2-041

Do alcohol based hand rubs have efficacy against multidrug-resistant organisms?

De Nardo E[1], Wilson-Edmonds S[1], Beausoleil C, Terri Eastman T[2], Yeik Alyssa[2] and **Macinga D[1]**
[1]GOJO Industries Inc., USA
[2]Bioscience Laboratories Inc., USA

Background: Multidrug-Resistant Organisms (MRO) including Vancomycin-Resistant *Enterococci* (VRE), *Staphylococcus aureus* and the new yeast *Candida auris* (MDRCA) are often passed from person to person by the contaminated hands of caregivers.1, 6,7,8,9 Hands become contaminated by contact with patients infected with MRO or contaminated surfaces. Cleaning hands with soap and water or use alcohol-based hand rubs (ABHR) are the main recommendation of WHO 2 for preventing the spread of MRO in health care settings. However, the efficacy of ABHR against MRO is not well documented 3

Objectives: Determine the efficacy of different formulations of ABHRs (gel and foam) against different strains of MDRO such as VRE, MRSA, Klebsiella and the recent discovered multidrug-resistant yeast *Candida auris*.

Methods: Three ABHR ranging from 62% to 70% alcohol content in gel and foam format were evaluated using a 15 second *in vitro* Time-Kill (ASTM E 2315) 4 against several strains of *S. aureus*. In addition, two formulations of ABHR (gel and foam 70%) were tested against more than 40 strains of antibiotic susceptible and resistant bacteria. For *C. auris* a different formulation of ABHR was also included. Statistical comparison of log10 reductions (LR) was performed using the Fisher's LSD Test ($p<0.05$).

Results: ABHR formulations gel or foam from 62-70% ethanol content, reduced all strains of bacteria antibiotic sensitive or resistant as well as *C. auris* tested by ≥ 6 log10 (≥ 99.9999%) in 15 seconds.

Conclusions: No differences in susceptibility to alcohol were shown by antibiotic resistant bacteria when compared to the sensitive strains. Alcohol 60% or higher showed the same level of efficacy. The emerging multidrug-resistant yeast Candida auris also showed complete susceptibility to the 3 formulations tested. These results support WHO recommendations for use of ABHR by healthcare personnel for preventing the spread of MRO.

Biography

Elizabeth De Nardo. joined GOJO Industries, Inc. in March 2008 as a Senior Scientist, conducting research projects in collaboration with experts in the areas of infection control, hand hygiene, Norovirus and Microbiome from different US Institutions. She holds a PhD in General Microbiology with expertise in Virology with more than 20 years of experience as a researcher acquired in previous jobs.

denardoe@gojo.co

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