Formulation and Testing of Alcohol-based Hand Sanitizers

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First published: 13 May 2022

https://doi.org/10.1096/fasebj.2022.36.S1.R5727
NSF HRD 2011938
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Abstract

The pandemic caused as a result of Covid-19 brought awareness to the use of hand sanitizers around the world. Maintaining hand hygiene has been confirmed to be critical for diminishing the colonization and incidence of infectious diseases. The objective of this study was to create a formulation of alcohol-based hand sanitizer that is effective at reducing the presence of microorganisms. A comparative assessment of antimicrobial efficacy of different hand sanitizers was used to compare two leading brand hand sanitizers to the 2 formulations made in the experiment. A modified Kirby-Bauer zone of inhibition method was used to monitor the reduction of living E. coli cells in the presence of each hand sanitizer. Formulation 1 was proven to be the most efficient having exhibited the highest zone of inhibition within the study. Formulation 1 consisted of: Isopropyl Alcohol 75%, Glycerol 1.45%, Hydrogen Peroxide 0.125%, and water. Hydrogen peroxide in the formulation was found to be the missing ingredient in comparison to most of the leading brand hand sanitizers. The formulation will be tested further to discover what microorganisms may not be affected by this solution.