

Antimicrobial efficacy of novel alcohol-based hand scrubs with clove oil, cinnamon oil and aloe vera leaf extract against *Acinetobacter baumannii* and *Proteus mirabilis*

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Poor hand-hygiene compliance among healthcare workers leads to increase disease transmission. The aim of the study was to develop alcohol based hand scrubs using medicinal plant extracts and evaluate the antimicrobial efficacy against selected microorganisms. Two types of alcohol based herbal hand scrubs were prepared, with the combination of clove oil and leaf extract of aloe vera (F₁) and combination of cinnamon oil and leaf extract of aloe vera (F₂). Twenty-five health care professionals (medical laboratory technologists and research officers) at Medical Research Institute, Sri Lanka were randomly tested to identify the viable pathogens present on their hands. From the identified microorganisms, standard cultures of *Acinetobacter baumannii* and *Proteus mirabilis* were used to test antimicrobial activity of the prepared scrubs using agar well-diffusion method. The physical stability parameters (pH, odor, appearance and colour) were monitored for 90 days at room temperature. The formulated hand scrubs were found to be homogenous, liquid and milky-white in colour with a pleasant odor. The mean values of inhibition zones of F₁ were 20.00 ± 2.00 mm and 20.30 ± 1.53 mm against *Acinetobacter baumannii* and *Proteus mirabilis* respectively. The mean values of inhibition zones of F₂ were 10.00 ± 0.00 mm and 09.33 ± 1.15 mm against *Acinetobacter baumannii* and *Proteus mirabilis* respectively. No inhibition zones were obtained for the negative controls (distilled water-N₁, glycerin-N₂) and positive controls (70% ethanol-P₁, market product-P₂) against the pathogens tested. Therefore, it is concluded that the formulated alcohol-based hand scrubs are having promising antimicrobial activity against the pathogens tested.

Keywords: Alcohol based hand scrubs, aloe vera leaf extract, pathogens, cinnamon oil, clove oil

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