

OP 29 - Formulation of Non-alcohol Based Hand Scrubs with Medicinal Plant Extracts and Evaluation of the Antimicrobial Efficacy

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Background: Hand hygiene is taken as an effective preventive measure to avoid spread of antimicrobial resistance.

Objectives: The aim of the study was to develop non-alcohol based hand scrubs using natural plant extracts and evaluate the antimicrobial efficacy against selective microorganisms.

Methodology: Two formulations (F₁ and F₂) of non-alcohol based herbal hand scrubs with medicinal plant extracts were prepared. F₁ formulation was prepared by the combination of clove oil and medicinal aloe while the F₂ formulation by the combination of cinnamon oil and medicinal aloe as the herbal extracts. Two positive controls and two negative controls were used. Health care professionals were randomly tested to identify the viable pathogens, which are present on hands. Among the identified microorganisms, antimicrobial activity was tested using agar well diffusion method against standard cultures of *Candida albicans* and *Streptococcus pyogenes* identified. The physical stability parameters (pH, odor, appearance and color) were measured for 90 days at room temperature.

Results and conclusions: F₁ and F₂ hand scrubs were found to be homogenous liquid and milky white in colour with a pleasant odor. The mean values of zones of inhibition of F₁ hand scrub were 34.67±1.16 mm and 21.00±0.00 mm against *C. albicans* and *S. pyogenes* respectively. The mean values of zones of inhibition of F₂ hand scrub were 21.00±3.00 mm and 12.33±0.58 mm against *C. albicans* and *S. pyogenes* respectively. The mean values of inhibition zones of negative controls (distilled water-N1, glycerin-N2) and 70% ethanol (positive control-P1) against *C. albicans* and *S. pyogenes* were zero (0.00) mm. The mean values of inhibition zones of the market product (positive control-P2) were 11.30±1.53 mm and 10.00±0.00 mm against *C. albicans* and *S. pyogenes* respectively. It is concluded that the formulated two non-alcohol based hand scrubs (F₁ and F₂) have promising antimicrobial activity against pathogens tested.

Keywords: *Candida albicans*, cinnamon oil, clove oil, non-alcohol based hand scrub *Streptococcus pyogenes*