

## PP 1

### ***In-vitro* antimicrobial activity of non-alcohol-based hand scrubs rich with cinnamon oil against selected pathogens**

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**Background:** The hands of healthcare providers are the most common vehicle for the transmission of microorganisms. Maintaining hand hygiene is considered as a key measure to reduce the spread of pathogens in healthcare settings.

**Objective:** To develop non-alcohol-based hand scrubs (NABHS) using cinnamon oil and evaluate the *in-vitro* efficacy against *Candida albicans*, *Streptococcus pyogenes*, and *Staphylococcus aureus*.

**Method:** Two formulations (F<sub>1</sub> and F<sub>2</sub>) of non-alcohol-based hand scrubs were prepared by incorporating cinnamon oil and medicinal aloe in different concentrations. The physical stability parameters (pH, odor, appearance and colour) were measured for 90 days at room temperature. *In-vitro* antimicrobial activity was tested using the agar well diffusion method against standard cultures of *Candida albicans* (ATCC 10231), *Streptococcus pyogenes* (ATCC 12384) and *Staphylococcus aureus* (ATCC 25923) with compared to positive and negative controls.

**Results:** F<sub>1</sub> and F<sub>2</sub> hand scrubs were found to be homogenous liquids and milky white in colour with a pleasant odor. The mean values of zones of inhibition of F<sub>1</sub> hand scrub were 10.3±0.6 mm, 14.7±4.0 mm, and 11.3±0.6 mm against *C. albicans*, *S. pyogenes*, and *S. aureus* respectively. The mean values of zones of inhibition of F<sub>2</sub> hand scrub were 21.0±3.0 mm, 12.3±0.6 mm, and 10.0± 0.0 mm against *C. albicans*, *S. pyogenes*, and *S. aureus* respectively. The mean values of inhibition zones of negative controls namely, glycerin for F<sub>1</sub> and distilled water for F<sub>2</sub> were zero (0.0) mm. The mean values of inhibition zones for positive control (market product) were 11.3±1.5 mm, 10.0±0.0 mm, and 12.3±1.2 mm against *C. albicans*, *S. pyogenes*, and *S. aureus* respectively.

**Conclusion:** Formulated F<sub>1</sub> NABHS has antibacterial activity while F<sub>2</sub> NABHS has promising antifungal activity against selected pathogens compared to positive control.