

## **ALCOHOL BASED HAND SCRUBS WITH MEDICINAL PLANT EXTRACTS**

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Inadequate hand hygiene contributes to infection transmission in health care settings. Such hospital acquired infections leads to increased morbidity and mortality. Alcohol based water less (ABWL) hand scrub products are a popular and a scientifically proven method of hand sanitation. However, drying of the alcohol may cause irritation to the hands and could lead to noncompliance. Our objective was to determine whether the addition of cinnamon and clove extracts to ABWL hand scrub products would increase the duration and spectrum of antimicrobial activity and prevent rapid drying due to the natural moisturizing agents.

Essential oils of clove and cinnamon were extracted through steam distillation. Medicinal aloe pulp was also extracted. Two different clove and cinnamon ABWL hand scrubs were prepared and the efficacy was evaluated using fingertip bacterial colony count method for 15 minutes in 50 healthy volunteers. The hand scrubs were specifically tested with *Staphylococcus aureus*, *Streptococcus pyogens*, *Escherichia coli* and *Pseudomonas aeurugenosa* for the antimicrobial action. A questionnaire was administered to evaluate the participants' perception of the hand scrub.

The Microbial colony growth of tested samples after using ABWL hand scrubs with clove and cinnamon were significantly reduced ( $p < 0.001$ ). However, 5% colony growth was shown in tested samples after using 70% ethanol. Both Gram positive and Gram negative bacteria were susceptible to the herbal based hand scrubs. Participant perception of the herbal based hand scrub revealed that the hand wash had minimal adverse effects.

Herbal ABWL hand scrubs have the desired safety and efficacy for hand hygiene in healthcare settings. Furthermore, the use of ABWL application with medicinal plant extracts is more advantageous because of its easiness of use due to no water consumption, moisturizing effect and lesser adverse effects. Further laboratory tests are needed to evaluate the efficacy against specific groups of pathogens.