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FORMULATION AND EVALUATION OF *Mentha arvensis* L. LEAVES EXTRACT CONTAINING HAND SANITIZER

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Hand hygiene is an important to prevent or minimize the transmission of infections. Hand sanitizers are one of the best formulations to clean the hand instantly. The formulation of herbal containing alcohol based hand sanitizer could improve the antimicrobial efficacy. The plant, *Mentha arvensis* (mint) has been showed good anti-microbial activity and is widely cultivated in Sri Lanka. Therefore, this study is focused on formulation and evaluation of physical parameters and antimicrobial activity of *M. arvensis* leaves extract containing hand sanitizer. The leaves of *M. arvensis* were collected from Inuvil, Jaffna, and shade dried and powdered. The leaves were extracted with ethyl acetate using maceration process and filtered, followed by removing the solvent with rotary evaporator. Two different hand sanitizers were prepared using 5 % (formulation A) and 10 % (formulation B) of plant extract. Other formulation additives used in the formulations were carbopol 940, ethanol, polysorbate-20, tri-ethanolamine, methyl paraben and deionized water. Blank hand sanitizer was prepared by excluding plant extract. WHO standard alcohol hand sanitizer was used as standard and blank hand sanitizer used as a control. Physical parameters such as organoleptic characteristics, pH, homogeneity, and turbidity were evaluated. Antimicrobial effectiveness of prepared formulations was tested against the *Escherichia coli*, *Staphylococcus aureus and Pseudomonas aeruginosa* by using agar well diffusion method. Zone of inhibition was measured and analyzed with one-way ANOVA using SPSS software. Dark green homogenous, translucent gel formulations with characteristic odour of mint were obtained. The higher antibacterial effect was found with formulation B against all three strains compare to formulation A. Mean values of inhibition zones of formulation B against *E. coli, S. aureus and P. aeruginosa* were 14,17 mm, 10.17 mm, and 3.83 mm respectively whereas that of standard were 27 mm, 26 mm, and 12 mm respectively. Antimicrobial activity of formulation B showed significant difference ($P > 0.05$) with standard. The formulation B had optimum physical characteristics and good anti-microbial activity. However, the stability test for the formulation B need to evaluate to ensure the shelf life of this formulation.

Keywords: *Mentha arvensis* L, hand sanitizer, formulation.