Assessing the Effectiveness of Various Concentrations of Lemongrass *(Cymbopogon nardus)* Leaf Extract in Lotion Formulation as a Mosquito Repellent

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Abstract

This study investigated the efficacy of different concentrations of lemongrass *(Cymbopogon nardus)* leaf extract in lotion formulation as a mosquito repellent. Mosquito-borne diseases pose significant health risks globally, necessitating effective repellent solutions. The rationale behind this research lies in exploring natural alternatives to conventional chemical-based repellents, aiming for safer and more sustainable options. The objective is to assess the repellency potential of varying concentrations (20% and 40%) of lemongrass leaf extract incorporated into lotion formulations against mosquitoes. Through a systematic methodology, formula preparation was achieved with standardization containing different concentrations of lemongrass extract prepared and tested against the skin of a volunteer in a mosquito-prone area and control group with an FTIR (Fourier transform infrared) analysis. The results demonstrated the efficiency of mosquito bite repellent, which was observed and completed using statistical analysis with the volunteers' feedback documenting the quality of the lotion, its ability to repel, and its texture as well as if there were any adverse effects during application. Furthermore, a discussion of the observed results highlighted the potential of lemongrass extract as an effective repellent, with higher concentrations (40%) showing greater efficacy. The lotion formulations containing lemongrass leaf extract were found to have several positive attributes according to volunteer feedback. Firstly, the texture was reported to be very soft, indicating a comfortable application experience. Additionally, the fragrance was described as pleasant, which may contribute to user satisfaction. Most importantly, the effectiveness of the lotion as a mosquito repellent was noted, as it successfully repelled mosquitoes. This suggests that lemongrass leaf extract holds promise as a natural alternative for mosquito control. This study fills a crucial research gap by providing empirical evidence on the effectiveness of lemongrass extract in lotion formulations, offering a promising natural solution for mosquito repellency. In conclusion, feedback from volunteers reinforces the notion that lemongrass leaf extract lotion formulations can be effective and natural mosquito repellents with desirable sensory characteristics.

Keywords: *Cymbopogon Nardus, Synthetic Mosquito Repellent, Herbal Plant, Pure Rose Water, Fourier tTransform Infrared, Eco-friendly Lotion, Statistical Analysis*