



## Preliminary Study of the Mosquito Repellent and Adulticidal Effects of Volatile Oils of Lemon Grass (*Cymbopogon Winterianus*) in Imo State, Southeast Nigeria

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### Abstract

Lemon grass (*Cymbopogon winterianus*) has been widely acclaimed to possess therapeutic, cosmetic and insecticidal activities. This study was conducted using a field controlled trial by human volunteers to confirm the effectiveness and applicability of locally-produced Lemon grass oil as a mosquito repellent and adulticidal agent for the prevention of mosquito-borne diseases in Nigeria. Volatile oil was extracted using petroleum ether as solvent while olive oil was used as oil base. The study was conducted between September and October 2017 and made use of 12 volunteers across three locations. The lotions were applied on exposed body parts of the volunteers and they worked three shifts daily. The biting rate, percentage repellence complete protection time and whole night protection were measured and recorded. Topical application of each lotion reduced the biting rate of mosquitoes across the three locations, with the 60% (v/v) exhibiting higher impact of 341 vs 32; 438 vs 44 and 388 vs 33. The 60% (v/v) formulation also had the highest percentage repellence of 91.92% at Location I, offered a whole night protection against mosquito in location I and O and offered a Complete Protection Time (CPT) of 21.6, 18.93 and 20.8 respectively across all three locations. There was a significant statistical association  $r=0.95$  ( $p<0.05$ ) between concentrations of the Lemon grass oil formulations and mean duration protection time against mosquitoes. All formulation exhibited adulticidal activities, with the 60% (v/v) formulation having higher impact, causing fast immobilization or paralyzing effect on some mosquitoes that were at close range to treated volunteer's body. The study concludes that volatile oils of Lemon grass possess mosquito (*A. gambiae* and *An. funestus*) repellent and adulticidal effects, especially at higher concentrations and can be used to reduce human-mosquito contacts and hence mosq quitoborne diseases and irritation caused by their bites.

### Biography

Emmanuel Nwanya Completed Master of Public Health, and he is an Associate Professor at the Department of Public Health, Federal University of Technology, Owerri, Imo State, Nigeria.

### Publications

Emmanuel Nwanya, Christopher Sule, Oyamienlen, Knowledge and practice of Food Hygiene Among Food vendors in ihiagwa, Owerri West local Government Area, Imo State, Journal Title: *Texila International Journal of Public Health*

Emmanuel Nwanya, Ifudu Chidera Justus, Ojukwu Ihuoma Nneka, Investigation of Presence and Levels of Polycyclic Aromatic Hydrocarbons around An Asphalt Plant in Imo State Nigeria(2020), Journal of Innovative Science and Research Technology.



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