

Repellent Activity Of Mosquitoes To Herbal Formulations

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The present study was conducted to determine the mosquito repellent activities of some selected plant materials in order to obtain safe and efficient herbal mosquito repellent formulations by combinations of the selected plant materials. *Azadirachta indica* seeds were soaked in hexane overnight and extract was filtered and the filtrate was concentrated by rotary evaporator. Same procedure was carried out for *Vitex negundo* leaves using hexane and ethanol solvents. Hydro-distillation process was performed for *Ocimum sanctum* leaves, *Curcuma longa* rhizomes and *Citrus sinensis* peels using Clevenger-arm apparatus in order to obtain the essential oils. Essential oils of *Cymbopogon nardus* leaves, *Eucalyptus globulus* leaves and *Syzygium aromaticum* buds were purchased from a reliable source. 10% (V/V%) extract / essential oil containing ethanol solutions were prepared using each plant extract / essential oil and mosquito repellent activity testing was carried out using arm-in-cage method. Volunteer's forearm which had been rubbed with 1 ml of the test solution was exposed to the cage where 20 blood-seeking mosquitoes had been placed and the number of mosquitoes that aligned or biting the arm was recorded in each minute for five minutes. 3 replicates were carried out for each extract / essential oil containing ethanol solutions. After analysing the mosquito repellent activity of individual extracts and essential oils, a mosquito repellent gel and a mosquito repellent spray which contained 16% (V/V%) active ingredients each were prepared. Outdoor and indoor field trials were conducted in two days from 5 am to 11 am by separately applying the mosquito repellent gel and the mosquito repellent spray on volunteers' legs. The mosquito repellent activities were found to be in the order: *Cymbopogon nardus* and *Eucalyptus globulus* (100%) > *Ocimum sanctum* (97.94%) > *Syzygium aromaticum* (95.81%) > *Citrus sinensis* (93.75%) > *Curcuma longa* (89.56%) > *Vitex negundo* (85.44%) > *Azadirachta indica* (81.25%). The gel and the spray showed 100% mosquito repellency for outdoor and indoor field trials which were carried out for six hours each day for two days.

Key words: Mosquito Repellent Activity, Plant Extract, Essential Oil,