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Field Investigation on the Repellent Action of Some Aromatic Plants by Traditional Means against *Anopheles gambiae* s.l., *Anopheles pharoensis* and Culicine Mosquitoes around Koka, Central Ethiopia

By

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Abstract

Various plants are used as traditional repellents against biting insects and other pests in different parts of the world by different application methods. The present study was an attempt to evaluate some of these practices (direct burning and thermal expulsion) on *Ocimum basilicum, Eucalyptus camaldulensis, Corymbia citriodora* and *Ocimum suave*. The study was conducted under natural field condition in selected houses and with five by five Latin square experimental design. In another experimental set up (six by six Latin square design), mosquito coil was used as a standard repellent with the intention to compare its effects with that of the test plants.

When directly burned, *O. basilicum* exhibited the highest percentage repellency (73.1%, $p< 0.001$) against *An. gambiae s.l* followed by *O. suave* (71.51%, $p< 0.001$), and *C. citriodora* (70.59%, $p< 0.001$). *E. camaldulensis* showed the least efficacy (65.29%, $p< 0.001$). *C. citriodora* showed the highest percentage repellency (72.87%, $p< 0.001$) against *An. Pharoensis* followed by *O. basilicum* (72.87%, $p< 0.001$) and *O. suave* (69.66%, $p< 0.001$). Whereas in thermal expulsion, *C. citriodora* and *O. basilicum* showed similar efficiency (78.69%, $p< 0.001$; 78.66%, $p< 0.001$, respectively) with slight difference against *An. gambiae s.l.* followed by *O. suave* (73.55, $p< 0.001$). *E. camaldulensis* showed the least efficacy (71.91%, $p< 0.001$) against *An. gambiae s.l.* like in the direct burning. Thermal expulsion of *O. basilicum* also exhibited the highest repellency percentage (79.15%, $p< 0.001$) against *An. pharoensis* followed by *C. citriodora* (76.76%, $p< 0.001$), *O. suave* (75.06%, $p< 0.001$) and *E. camaldulensis* (72.22%, $p< 0.001$).

In the tests with mosquito coil, the mosquito coil exhibited the highest percentage repellency of all the test plants against all the test mosquitoes although the differences were not statistically significant ($p> 0.05$). The treatments did not generally show significant differences among themselves when compared ($p> 0.05$). Likewise, no significant differences were observed between the two application methods. However, the plants generally showed higher percentage repellency when thermally expelled. In conclusion, the use of *O. basilicum* and *O. suave* against these mosquitoes is recommended as they can easily be cultivated within short period of time by the local communities.