

Constituents of the essential oil of *Suregada zanzibariensis* leaves are repellent to the mosquito, *Anopheles gambiae* s.s.

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Source

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Abstract

In traditional African communities, repellent volatiles from certain plants generated by direct burning or by thermal expulsion have played an important role in protecting households against vectors of malaria and other diseases. Previous research on volatile constituents of plants has shown that some are good sources of potent mosquito repellents. In this bioprospecting initiative, the essential oil of leaves of the tree, *Suregada zanzibariensis* Verdc. (Angiospermae: Euphobiaceae) was tested against the mosquito, *Anopheles gambiae* s.s. Giles (Diptera: Culicidae) and found to be repellent. Gas chromatography (GC), GC-linked mass spectrometry (GC-MS) and, where possible, GC-co-injections with authentic compounds, led to the identification of about 34 compounds in the essential oil. About 56% of the constituents were terpenoid ketones, mostly methyl ketones. Phenylacetaldehyde (14.4%), artemisia ketone (10.1%), (1S)-(-)-verbenone (12.1%) and geranyl acetone (9.4%) were the main constituents. Apart from phenylacetaldehyde, repellent activities of the other main constituents were higher than that of the essential oil. The blends of the main constituents in proportions found in the essential oil were more repellent to *An. gambiae* s.s. than was the parent oil ($p < 0.05$), and the presence of artemisia ketone in the blend caused a significant increase in the repellency of the resulting blend. These results suggested that blends of some terpenoid ketones can serve as effective *An. gambiae* s.s. mosquito repellents.