Repellent activity of plant essential oil extracts against malaria vector *Anopheles arabiensis* Patton (Diptera: Culicidae).

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**ABSTRACT:** Repellent activity of essential oils extracted from the leaves of *Otostegia integrifolia* and *Stephania abyssinica*, roots of *Echinops kebericho* and seeds of *Millettia ferruginea* and *Datura stramonium* were tested against malaria vector, *Anopheles arabiensis*. The repellent activity was determined at 125, 250, 500 and 1000 ppm concentration by human volunteer. The dorsal side of each human arm 153.86 cm$^2$ of the skin was exposed for twenty minutes by covering the remaining area with rubber glove. The control and treated arm were introduced simultaneously into mosquito cage under laboratory condition maintained at 27 ± 1°C, 65–70% RH. Among the four different concentrations tested, maximum repellent activity was observed at 1000 ppm of *O. integrifolia*, *S. Abyssinica* and *M. ferruginea* and also *E. kebericho* has strong repellent properties in all concentrations. *O. integrifolia*, *S. abyssinica*, *M. ferruginea* and *E. kebericho* may contain repellent chemicals which can be used for the development of safer mosquito repellent product. © 2016 Association for Advancement of Entomology

**KEY WORDS:** Repellent activity, volatiles, malaria vector, *Anopheles*

**INTRODUCTION**

Mosquitoes are responsible for transmission of malaria which is one of the important and fatal diseases worldwide (Yohannes and Boele, 2011). In sub-Saharan Africa, children under the age of five years and pregnant women are highly affected by malaria (Morlais *et al.*, 2005). In Ethiopia, 68 per cent of the populations live in malaria prone areas covering almost 75 per cent of the land (FDROEMOH, 2006; PMI, 2010).

The diverse eco-climatic condition in Ethiopia is much favourable for malaria transmission pattern seasonal and unstable. The widely distributed malaria vector in Ethiopia includes *Anopheles arabiensis*, *Anopheles pharoensis*, *Anopheles funestus* and *Anopheles nili*. These vector breeds in small, temporary, sunlight pools and in low land as well as highland areas up to 2000 m. a. s. l. (Nyanjom *et al.*, 2003; Ashenafi Woime, 2008).

According to the World Health Organization, mosquito control using insecticides is the most efficient means for short term being widely exploited in the treatment of bed nets and indoor residual spraying (Yakob *et al.*, 2011; Bigoga *et al.*, 2012). Chemical control of mosquitoes is highly complicated because of persistent chemical insecticides lead to environmental pollution, killing non-target organism and insecticides resistance development among the vector populations, especially in the *Anopheles gambiae* complex (UNICEF, 2000). Despite, considerable effort is