

**CHEMICAL SIGNALS MEDIATING PREDATION ON *ANOPHELES*
GAMBIAE BY A SPECIALIZED JUMPING SPIDER, *EVARCHA*
CULICIVORA.**

DELAIDE MUNGAI

**MASTER OF SCIENCE
(Chemistry)**

**JOMO KENYATTA UNIVERSITY OF
AGRICULTURE AND TECHNOLOGY**

2008

ABSTRACT

The study on the volatiles of blood-fed *Anopheles gambiae* and their attractancy to the jumping spider *Evarcha culicivora* revealed details that have not been reported before.

The volatiles from both blood-fed and sugar-fed *An. gambiae* were trapped on three different adsorbents: Porapak Q, C-18 and activated charcoal. GC and GC-MS were used to identify the volatiles and test for attractancy to the volatiles was studied using a Yshaped and a 3-chamber olfactometer. GC-MS analysis of the volatiles revealed a mixture of hydrocarbons, benzenoid compounds, alcohols and ketones. These volatiles include 2,3-butanedione (3.32%), 3-methylpentane (11.15%), 3-hydroxy-2-butanone (41.28%), Propan-2-ol (7.13%), 2,2,5-trimethyl-3,4-hexanedione (1.13%), 1,3 dichlorobenzene (10.37%), 1,4-diethylbenzene (3.03%), 1,3-diethylbenzene (11.86%), 3 Hexanone (1.83%), 5-methyl-2-(1-hydroxy-1-methylethyl)cyclohexanol (2.05%) and Tetradecane (6.85%) which were identified from the volatiles from the blood-fed *An. gambie*. The compounds 3-hydroxy-2-butanone (8.14%), Heptane (3.11%), propan-2-ol (2.01%), 1,4-dichlorobenzene (5.48%), 1,2-diethylbenzene (3.50%), Nonanal (17.34%), Decanal (47.94%), 2-hydroxybenzoic acid methyl ester (0.01%), 4-ethylacetophenone (0.55%), Tetradecane (11.73%) and acetic acid phenyl ester (0.19) were identified from sugar-fed *An. gambiae*. The compounds 3-hydroxy-2-butanone, Propan-2-ol and Tetradecane were common to both volatiles. Full blend volatiles elicited the strongest attractancy for the spider with removal of different functional group compounds resulting in reduced attractancy. Attractancy was found to be functional group dependant as the attractancy was significantly reduced on removal of any one functional groups from the full blend.