Abstract

The female Anopheles gambiae, a malaria vector, detects ultrasound by its antenna, initiating an attractive or repulsive response. Modern electronic mosquito repellents exploit this concept in attempt to control malaria, but have shown only 20 % effectiveness. This work determines the startle response of the female A. gambiae to recorded sound of C. afra and A. tormotus and optimum acoustic transmission parameters needed for the design of an effective electronic mosquito repellent. A bioassay involving 3-4 day old fe ma le A. gambiae bred and reared under standard conditions was conducted in a standard glass cage yielding evasive behavioural responses on exposure to varied frequencies. The 35-60 kHz sound of A. tormotus and C. afra, the optimum frequency range, evoked evasive responses in an average of 46 % and 23 % of the mosquitoes, higher than the reported 20 % effective repulsion of EM R sound. The evasive response was characterized by 58.5o antenna erection, physical injury, unusual rest and movement, fatigue and falls; attributed to neural stress and fear for predation. The steady increase in signal intensity, maximum and mean acoustic energy in the sound of A. tormotus over all frequency ranges yielded greatest startle response in the female A . gambiae.