

Bioefficacy of *Ocimum sanctum* on Survival, Development and Reproduction of Dengue Vector *Aedes aegypti* L. (Diptera: Culicidae)

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Abstract : Vector borne diseases are a serious global concern. *Aedes aegypti*, the primary vector for viruses that cause dengue fever, dengue haemorrhagic fever, chikungunya and yellow fever is widespread over large areas of the tropics and subtropics. In last decade, diseases transmitted by *Aedes aegypti* are of serious concern. In past decade, number of cases of dengue fever, dengue hemorrhagic fever, and chikungunya has increased multifold. Present research work focused on impact of ethanol extract of *Ocimum sanctum* on dengue vector *Aedes aegypti*. 0-24 hr. old fourth instar larvae of lab-bred population of *Aedes aegypti* were exposed to ethanol leaf extract of *Ocimum* with concentrations ranging from 50 ppm to 400 ppm. Survival and development and the treated larvae and reproductive behaviour of the adults emerged from the treated larvae was evaluated. Our results indicated larvicidal potential of the leaf ethanol extract. The influence of the extract was dose dependent. 77.2% mortality was observed in the larvae exposed to 400 ppm for 24 hr. Treatment at lower concentrations revealed delayed toxicity. The larvae survived after treatment showed severe developmental anomalies. Consequently, there was the significant increase in duration of fourth instar larva. The L4 treated with 400-ppm extract moulted after 4.6 days; this was in sharp contrast to control where the larval period of the fourth instar lasts three days. The treated fourth instar larvae in many cases transformed into larva-pupa intermediates with the combination of larva, pupa characters. The larva-pupa intermediates had reduced life span and failed to moult successfully. The adults emerged from the larvae treated with lower doses had reduced reproductive potential. The females exhibited longer preoviposition period, reduced oviposition rate, abnormal oviposition behaviour and decreased fertility. Our studies indicated the possibility of the presence of JH mimic or JH analogue in the leaf ethanol extract of *Ocimum*. The present research work explored the potentials of *Ocimum sanctum*, also known as the queen of herbs, in integrated vector management programme of *Aedes aegypti*, which is a serious threat to human health.

Keywords : *Aedes aegypti*, development, mortality, *Ocimum sanctum* reproduction

Conference Title : ICE 2015 : International Conference on Entomology

Conference Location : Penang, Malaysia

Conference Dates : December 03-04, 2015