



King Saud University
**Journal of King Saud University
(Science)**

www.ksu.edu.sa
www.sciencedirect.com



ORIGINAL ARTICLE

Larvicidal and histological effects of *Melia azedarach* extract on *Culex quinquefasciatus* Say larvae (Diptera: Culicidae)

R.M. Al-Mehmadi *, A.A. Al-Khalaf

King Abdulaziz University, Department of Zoology, Saudi Arabia

Received 21 December 2009; accepted 27 January 2010
Available online 6 February 2010

KEYWORDS

Melia azedarach;
Culex quinquefasciatus;
Midgut;
Histology

Abstract Extracts from *Melia azedarach* L. (Meliaceae) were effective against third instar larvae of *Culex quinquefasciatus* (Say) in Saudi Arabia, using crude extract obtained in ethanolic solution from King Saud University. Toxicity was varied according to the concentration and period of exposure. We investigated the effect of the LC₅₀ on midgut and gastric caecae of 3rd larval instar of *Cx. quinquefasciatus*, the plant extract causing serious damage to the epithelial columnar cells. Light and electron microscopic observations revealed, by time 6, 12, 24 and 48 h, increasing damages of the larvae midgut epithelium. The most characteristic effects were midgut columnar cell vacuolization, microvilli damages, epithelium cell contents passing into the midgut lumen and finally the cell death. This article is the first report of the histopathological effects of the *M. azedarach* as a bioinsecticide in the midgut of *Cx. quinquefasciatus* larvae and the data obtained may contribute to a better understanding of the mode of action of this plant extract used as a bioinsecticide against *Cx. quinquefasciatus* larvae.

© 2010 King Saud University. All rights reserved.

1. Introduction

The biological control of immature stages now appears to be the most powerful means of reducing target populations of Culicidae and other dipteran pests. As a result of continuous application of chemical pesticides, resistance was a squired by insect pests besides residue contamination of human foods, mammalian toxicity and pollution of the environment. Numerous secondary compounds from plants are being studied for use as new effective, eco-friendly biopesticides (Pathak and Dixit, 1988; Chockalingam et al., 1990; Govindachari et al., 1996; Jayaprakasha et al., 1997). Muthukrishnan and Puspallatha (2001) evaluated the larvicidal activity of extracts from *Calophyllum inophyllum* (Clusiaceae), *Rhinacanthus nasutus*

* Corresponding author.

E-mail addresses: ralmehmadi@kau.edu.sa, d_almehmadi@yahoo.com (R.M. Al-Mehmadi), aj_khalaf@yahoo.com (A.A. Al-Khalaf).

