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Assessment of residual bio-efficacy and persistence of *Ipomoea cairica* plant extract against *Culex quinquefasciatus* Say mosquito

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Abstract. Specification on residual action of a possible alternative insecticide derived from plant materials is important to determine minimum interval time between applications and the environmental persistence of the biopesticides. The objective of this study is to evaluate crude acethonilic extract of *Ipomoea cairica* leaves for its residual and persistence effects against *Culex quinquefasciatus* larvae. Wild strain of *Cx. quinquefasciatus* larvae were used for the purpose of the study. Two test designs, replenishment of water and without replenishment of water were carried out. For the first design, a total of 10ml of test solution containing *Ip. cairica* extracts was replenished daily and replaced with 10ml of distilled water. For the second design, treatment water was maintained at 1500ml and only evaporated water was refilled. Larval mortality was recorded at 24 hours post-treatment after each introduction period and trials were terminated when mortality rate falls below 50%. Adult emergences from survived larvae were observed and number of survivals was recorded. For the non-replenishment design, mortality rate significantly reduced to below 50% after 28 days, meanwhile for replenishment of water declined significantly after 21 days ($P < 0.05$). There was no adult emergence observed up to seven days for non-replenishment and first two days for replenishment of water design. The short period of residual effectiveness of crude acethonilic extract of *Ip. cairica* leaves with high percentage of larval mortality on the first few days, endorses fewer concerns of having excess residues in the environment which may carry the risk of insecticide resistance and environmental pollution.

INTRODUCTION

Mosquitoes are well known as medically important vectors. *Culex quinquefasciatus* is one of the most abundant tropical house mosquito (Abu Hassan & Che Salmah, 1990) and urban vector of nocturnally periodic *Wuchereria bancrofti* (Cobbold) that causes lymphatic filariasis in Asia, Africa, the West Indies, South America, and Micronesia (Moses *et al.*, 2009). More than 1.3 billion people in 72 countries worldwide are threatened by lymphatic filariasis and over 120 million people are currently infected, with about 40 million disfigured and incapacitated by this disease (WHO, 2012). Bancroftian filariasis is endemic in our neighboring countries, Indonesia, Bangladesh (Omar *et al.*, 2001) and Thailand, particularly in rural, hilly, mostly forested areas of western regions along the Thai-Myanmar borders (Pothikasikorn *et al.*, 2008). Study by Vythilingam *et al.* (2005) reported that laboratory strain of the Malaysian *Cx. quinquefasciatus* mosquitoes were susceptible to *W. bancrofti* where 33% that