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# Larvicidal efficacy screening of Anacardaciae crude extracts on the dengue hemorrhagic vector, *Aedes aegypti*

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**Abstract.** Vector-borne diseases are still rife because of the re-emergence of diseases transmitted by mosquitoes. The objective of this paper is to evaluate the larvicidal efficacy of crude leaf extract of *Mangifera indica*, *Gluta renghas*, and *Melanochyla fasciculiflora* against vector of dengue hemorrhagic fever, *Aedes aegypti*. These plant species are endemic species and widely distributed in Malaysian forests. Leaves of *Ma. indica*, *G. renghas and M. fascculiflora* were collected from Teluk Bahang National Park, Penang Malaysia. Fractions of leaves were segregated, air–dried, powdered and extracted using Soxhlet with methanol. The solvent was removed by using rotary evaporator to obtain the crude extract. Using WHO standard larval bioassay test method, third instar larvae of *Aedes aegypti* were exposed to concentration ranging from 200- 4500ppm of methanol extract for all plant species. Larval mortality was observed after 24 hours exposure. The highest susceptibility and toxicity was recorded by *Mangifera indica* with the lowest concentration at 800ppm followed by *M. fasciculiflora* and *G. renghas*. This indicates that crude plant extract is very effective in killing *Ae. aegypti* mosquitoes. This finding may lead to new low cost alternative, environmentally friendly method for mosquito control programs. To our knowledge, this is the first report on larvicidal bioefficacy from endemic Malaysian plants.

## INTRODUCTION

Dengue is a mosquito-borne viral disease, becoming a huge public health problem in developing countries. Approximately two billion people live in the tropical and subtropical region (Rigau-Pérez *et al.*, 1998) around the world, and roughly around 120 million people travelling to these countries are at risk of being infected by dengue viruses (Gauzman & Kouri, 2002). Two billion people worldwide are at risk with annual infection rate of 2.5- 5.0%, and 2.5% of the fatal infection were mostly children (WHO, 2008a).

Since 1980, Malaysia with a population at approximately 27.7 million and a population density of 84 per sq. km, has consecutively recorded rising cases of dengue outbreaks (Lam, 1994). *Aedes aegypti* and *Aedes albopictus* are vectors for dengue fever and dengue hemorrhagic fever in Malaysia and has been reported since 1950s (Smith, 1956). The mosquitoes transmit dengue virus (DENV) to susceptible humans (Guha-Sapir & Schimmer, 2005). The increase in dengue cases is considered to be a reflection of the rampant development towards massive infrastructure and urbanization which is a favourable factor for breeding site of *Ae. aegypti* (Gubler, 2002; Muhammad Azami *et al.*, 2011).

To reduce the *Aedes* mosquito population, most of the mosquito control programs in the world usually apply chemical control methods. Prior to the discovery of