

**UNIVERSITI TEKNOLOGI MARA**

**INSECTICIDE RESISTANCE OF AEDES MOSQUITO  
LARVAE TO TEMEPHOS**

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## **Insecticide Resistance of *Aedes* Mosquito Larvae to Temephos**

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### **Abstract**

*In areas of South East Asia, Aedes aegypti* (Linnaeus) and *Aedes albopictus* Skuse have been implicated in the transmission of dengue fever and dengue haemorrhagic fever (Smith, 1956). As in other South East Asia countries, *Ae. aegypti* and *Ae. albopictus* are widely distributed throughout Malaysia and have been incriminated as vectors of dengue (Lo, 1984). Insecticide resistance originates in the genetic variability of an insect population. Mutations give rise to some individuals with an enhanced ability to survive exposure to chemicals that would kill fully susceptible individuals. In Malaysia, temephos (Abate®) is recommended as a larvicide by Ministry of Health and widely used since 1973 (Chen, 2005). World Health Organization (WHO) standard procedures were used namely, larval bioassay to determine the susceptibility of lethal concentration (LC) and Resistance Ratio (RR). *Aedes* larvae collected from both the stated localities had mortality indicating resistance. When the early third instar larvae were selected for bioassay test, the LC<sub>50</sub> of Bangsar strain was the highest, with value of 0.015mg/L while Kolej jati strain showed 0.012mg/L. These values were divided by the LC<sub>50</sub> of the lab Strain which is 0.003mg/L. In this study, the calculated value for the resistance ratio for Kolej Jati and Bangsar were 4 and 5 respectively. This showed that *Aedes* Mosquito larvae from both localities have developed resistance to temephos. Emphasis need to be given more to the variability of control measures rather than depending on one method

**Keywords:** Resistance monitoring, *Aedes*, Temephos, Larvacide

## CHAPTER 1

### INTRODUCTION

#### 1.1 Dengue Fever in South East Asia

In areas of South East Asia, *Aedes aegypti* (Linnaeus) and *Aedes albopictus* Skuse have been implicated in the transmission of dengue fever and dengue haemorrhagic fever (Smith, 1956). As in other South East Asia countries, *Aedes aegypti* and *Aedes albopictus* are widely distributed throughout Malaysia and have been incriminated as vectors of dengue (Lo, 1984). Dengue fever is an acute febrile viral disease caused by the viruses of dengue fever. The epidemic of dengue had established in most tropic countries including southern Cambodian; China, Indonesia, Myanmar, Malaysia, Philippines, Thailand, Vietnam, Bangladesh, India, Pakistan and Sri Lanka.

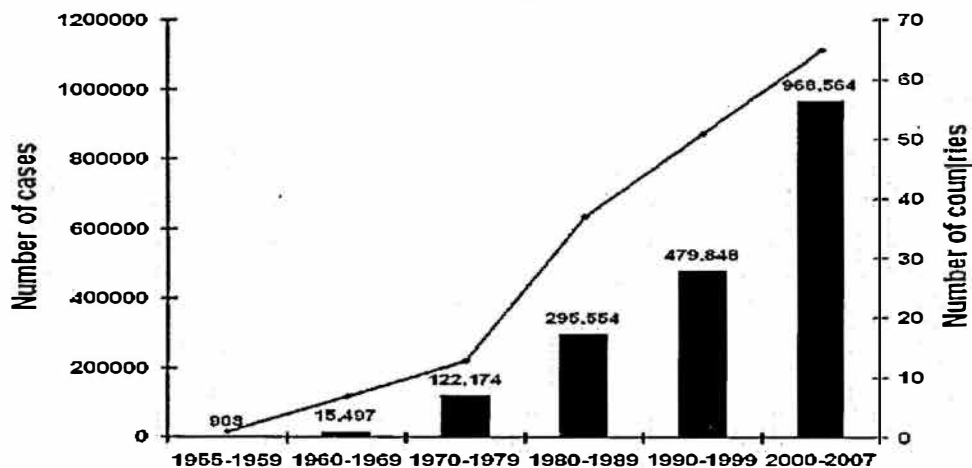


Figure 1: Annual average number of Dengue Fever/Dengue Hemorrhagic Fever cases reported to WHO and average annual number of countries reporting

Over the years, dengue cases reported has been rising with rapidly. The first reported epidemics of DF occurred in 1779-1780 in Asia, Africa, and North America.