

CHAPTER 1

INTRODUCTION

1.1 Background

Dengue fever is a disease caused by dengue virus which is spread by the *Aedes aegypti* mosquito. The virus is distributed through each of the bite. Most common type of dengue which occurs in the community is the Dengue Hemorrhagic Fever (DHF). Dengue fever is common in most cities in Malaysia and also in many tropical countries. Based on the Ministry of Health (MOH), from the cases of dengue which occurred in January, the state of Selangor has the highest prevalence of total 3,789 cases. (MOH, 2016)

The *Aedes aegypti* mosquitoes can spread the dengue fever within 8-12 days after sucking blood from a human suffering from dengue fever. Female mosquitoes infected with dengue virus can transmit the virus to the next generation through transovarial transfer (through the ovary). Dengue virus can only be passed on to others in the next 18 hours and at least 3 days after the onset of symptoms. (Soegijanto, 2004)

There are several solutions to address diseases that are transmitted by mosquitoes. Ovicide is one of the most useful ways to prevent the spread of disease by inhibiting or development of mosquito eggs or kill the mosquito eggs. The mostly used ovicide today is Abate. Abate is an organophosphate which acts

by contact, inhibiting an enzyme that is important in the normal functioning of the egg (Fitzpatrick, 2005).

The use of abate (temephos) in Malaysia has been since year 1973. It could be said Abate (temephos) has been used for more than 40 years (Fitzpatrick, 2005). In addition, one important thing to note is the emergence of resistancy in this mosquitoes towards abate . It is possible, because the use of Abate (temephos) is said to be more than 40 years in Malaysia thus causing resistancy in the mosquitoes. Reports of *Aedes aegypti* eggs resistancy towards abate (temephos) also have been found in several countries such as Brazil, Bolivia, Argentina, Cuba, the Caribbean, and Thailand (Carvalho,2015).

Along with public awareness about the use of abate that are likely to lead to resistancy, it is necessary to choose bioovicidal selectively to inhibit the development of *Aedes aegypti* eggs. The active substance like saponin and flavonoid obtained from plants are the alternatives that should be considered. In a study conducted, the wild asparagus extract with saponin and flavonoid tend to show remarkable ovicidal activity against the *Aedes aegypti* eggs(Govindarajan, 2014). A research study also shows the effect of *Acalypha indica linn* leaves containing flavonoids and tannins as active ingredients were proven to be effective anthelmintic whereas root extracts of *Acalypha indica linn* with active ingredients like flavonoids and saponins are still unknown as an bioovicide.

Thus in this study, we wil investigate the effect of *Acalypha indica linn* root extract as an bioovicide towards *Aedes aegypti* eggs.

1.2 Research problem

What is the effect of *Acalypha indica linn* extract as bioovicidal against eggs

(*Aedes aegypti*)?

1.3 Research objective

1.3.1 General objective

- To investigate the bioovicidal effect of extract derived from *Acalypha indica linn* root against the *Aedes aegypti* eggs.

1.3.2 Specific objective

- To prove the presence of active compound saponin and flavonoid in *Acalypha indica linn* root extract.
- To know the ovicidal activity in different concentration of *Acalypha indica linn* root extract as a bioovicidal against the *Aedes aegypti* eggs.
- To know the effective dose of *Acalypha indica linn* extract as a bioovicidal against *Aedes aegypti* eggs.

1.4 Significance of research

1.4.1 Academic significance :

- a. To give information about *Acalypha indica linn* which has bioovicidal effect.

1.4.2 Application significance :

- a. To help people use *Acalypha indica linn* extract to inhibit the development of mosquito eggs in the house to lower levels of dengue fever transmitted by *Aedes aegypti* mosquitoes .

