Cost-Effective Kit to Detect Dengue Virus in Mosquitoes

**A RAPID PCR TEST KIT**

Dengue viruses are transmitted to human through the bite of infected mosquitoes. For many years, members of the subgenus *Stegomyia*, especially *Aedes aegypti* and *Ae. Albopictus* (Skuse.), have been recognised as the primary vector of dengue. Rapid urbanisation has resulted in the creation of suitable habitats for cosmopolitan vector mosquitoes. Artificial containers are the most important factors determining the breeding of mosquito larvae especially *Aedes* since these are the major larval habitats in and near human habitation. The type and location, presence of shade and water conditions are also known to affect breeding. *Aedes aegypti* breeds in clean water collected in and around human settlements while *Aedes albopictus* can be found not only around and near human habitat, like *Ae. Aegypti*; but also in the forest and plantation. The four dengue serotypes: DEN-1, DEN-2, DEN-3 and DEN-4 belong to a larger heterogenous group of viruses called arboviruses. Dengue is affecting a large number of populations causing high mortality and morbidity. Despite extensive research on vaccine development, there is at present no known methods of controlling dengue except by interrupting the transmission by the mosquito vectors. This approach is less effective since the virus is already circulating in the population. A more effective approach is to detect the virus in the mosquitoes before it is introduced into the human population. This way, preventive vector control measures can be undertaken immediately to offset an outbreak. However, present method of detecting dengue virus in the vector is still dependent on cell culture and mice inoculation which are slow, costly and requiring skills. Therefore it is important to develop a rapid, easy to use and sensitive method of detection. The present study has came out with a rapid PCR test kit to detect dengue virus infection in mosquitoes to enhance early detection of dengue outbreak, so that remedial action can be taken prior to outbreak.

**COMPETITIVE ADVANTAGES**

- Can detect dengue virus in mosquitoes
- Able to process large number of mosquitoes
- All reagents and chemicals are supplied
- Positive control (infected mosquitoes) and negative control (non infected mosquitoes) are provided
- Easy to use
- Rapid detection
- Highly sensitive and specific
- Cost effective

**MARKET POTENTIAL**

The potential users for the test kit included Ministry of Health, town councils, researchers and private laboratories, especially for tropical and subtropical regions. In Malaysia, the estimation cost for *Aedes* control is USD 25.55 million per annual. As such, the present invention has a high market potential.