

A new paradigm for *Aedes* spp. surveillance using gravid ovipositing sticky trap and NS1 antigen test kit

Abstract

BACKGROUND: Dengue remains a serious public health problem in Southeast Asia and has increased 37-fold in Malaysia compared to decades ago. New strategies are urgently needed for early detection and control of dengue epidemics.

METHODS: We conducted a two year study in a high human density dengue-endemic urban area in Selangor, where Gravid Ovipositing Sticky (GOS) traps were set up to capture adult *Aedes* spp. mosquitoes. All *Aedes* mosquitoes were tested using the NS1 dengue antigen test kit. All dengue cases from the study site notified to the State Health Department were recorded. Weekly microclimatic temperature, relative humidity (RH) and rainfall were monitored.

RESULTS: *Aedes aegypti* was the predominant mosquito (95.6%) caught in GOS traps and 23% (43/187 pools of 5 mosquitoes each) were found to be positive for dengue using the NS1 antigen kit. Confirmed cases of dengue were observed with a lag of one week after positive *Ae. aegypti* were detected. *Aedes aegypti* density as analysed by distributed lag non-linear models, will increase lag of 2-3 weeks for temperature increase from 28 to 30 °C; and lag of three weeks for increased rainfall.

CONCLUSION: Proactive strategy is needed for dengue vector surveillance programme. One method would be to use the GOS trap which is simple to setup, cost effective (below USD 1 per trap) and environmental friendly (i.e. use recyclable plastic materials) to capture *Ae. aegypti* followed by a rapid method of detecting of dengue virus using the NS1 dengue antigen kit. Control measures should be initiated when positive mosquitoes are detected.