

## **Bacteria as a source of oviposition attractant for *Aedes aegypti* mosquitoes**

### Abstract

Since a safe and effective mass vaccination program against dengue fever is not presently available, a good way to prevent and control dengue outbreaks depends mainly on controlling the mosquito vectors. *Aedes aegypti* mosquito populations can be monitored and reduced by using ovitraps baited with organic infusions. A series of laboratory experiments were conducted which demonstrated that the bacteria in bamboo leaf infusion produce volatile attractants and contact chemical stimulants attractive to the female mosquitoes. The results showed that the female mosquitoes laid most of their eggs ( $59.9 \pm 8.1$  vs  $2.9 \pm 2.8$  eggs,  $P < 0.001$ ) in bamboo leaf infusions when compared to distilled water. When the fresh infusion was filtered with a  $0.45\mu\text{m}$  filter membrane, the female mosquitoes laid significantly more eggs ( $64.1 \pm 6.6$  vs  $4.9 \pm 2.6$  eggs,  $P < 0.001$ ) in unfiltered infusion. However when a  $0.8\mu\text{m}$  filter membrane was used, the female laid significantly more eggs ( $62.0 \pm 4.3$  vs  $10.1 \pm 7.8$  eggs,  $P < 0.001$ ) in filtrate compared to a solution containing the residue. We also found that a mixture of bacteria isolated from bamboo leaf infusion serve as potent oviposition stimulants for gravid *Aedes* mosquitoes. *Aedes aegypti* laid significantly more eggs ( $63.3 \pm 6.5$  vs  $3.1 \pm 2.4$  eggs,  $P < 0.001$ ) in bacteria suspension compared to sterile R2A medium. Our results suggest microbial activity has a role in the production of odorants that mediate the oviposition response of gravid mosquitoes.