
Assessment of artificial blood feeding methods and efficacy of different blood meal sources in mass rearing of *Aedes aegypti* for innovative vector controlling strategies

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Background

Mass rearing of vector mosquitoes of dengue is a crucial requirement for implementation of innovative vector controlling strategies such as Sterile Insect Technique (SIT), Incompatible Insect Technique (IIT) and transgenic mosquitoes. Selection of the artificial membrane-feeding technique and blood meal source have been recognized as key considerations in mass rearing of vectors.

Methodology

Three artificial membrane feeding techniques (Glass plate method, Metal plate and Hemotek membrane feeding method) and three blood sources (human, cattle and chicken) were evaluated based on feeding rates, fecundity and hatching rates of *Ae. aegypti*, under laboratory conditions. One-way ANOVA, cluster analysis, analysis of variance (ANOSIM) and principal coordinates (PCO) analysis, were used to investigate the significance in the variations among blood feeding.

Results

Feeding rates of *Ae. aegypti* significantly differed among the membrane feeding techniques as suggested by one-way ANOVA ($p < 0.05$). The metal plate method was identified as the most efficient and cost effective feeding technique. Blood feeding rate of *Ae. aegypti* was higher with human blood followed by cattle and chicken blood, respectively. However, no significant difference was observed among mosquitoes fed with cattle blood and human blood, in terms of fecundity, oviposition rate and fertility.

Conclusions

Metal plate feeding technique could be recommended as the most effective membrane feeding technique for mass rearing of *Ae. aegypti*, due to its high feeding rate and cost effectiveness. Since, obtaining human blood for insectary colony maintenance is problematic due certain ethical issues, cattle blood could be recommended for mass rearing *Ae. aegypti*.

Keywords: *Aedes aegypti*, blood feeding, techniques, blood meal, mass rearing.

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