

Preliminary study of mosquito larvicidal activity of Sri Lankan isolate of *Metarhizium anisopliae*

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Diseases transmitted by mosquitoes affect millions of people worldwide in many tropical and sub tropical countries including Sri Lanka. Mosquito control is a major priority to minimize the infections and transmission of mosquito-borne diseases in the tropical region. Increased public concern regarding the potential adverse environmental effects associated with the heavy use of chemical insecticides have prompted the search of alternative methods for mosquito control. The objective of the present study is to identify the mosquito larvicidal properties of *M. anisopliae* isolate against vector mosquitoes in Sri Lanka.

Infected insects of coconut beetles were collected from the coconut fields at Coconut Research Institute. A suspension of infected parts of beetle was prepared and pour plated and incubated to obtain the discrete colonies. Fungal colonies were identified by phase contrast microscope by examining the mycelia and conidiophores. *M. anisopliae* was grown on water agar and fungal spores were collected on sterile filter paper and spore concentration range of 1×10^7 to 1×10^2 spores/mL was prepared. A concentration range of *M. anisopliae* was tested against 4th instar larvae of *Culex quinquefasciatus*, *Aedes aegypti* and *Anopheles tessellatus* following the WHO protocol using 30 larvae. The ED₅₀ values were obtained and data were analysed using probit software analysis package.

M. anisopliae is an insecticidal fungus and produces a family of insecticidal compounds called the destruxins. However, mosquito larvicidal activity of destruxins has not been reported previously. A local strain of *M. anisopliae* was isolated from the infected coconut beetles and is the first report of mosquito larvicidal activity of Sri Lankan isolate of *M. anisopliae*. This strain showed the highest larvicidal activity (ED₅₀ = 1.310×10^4 spore/mL) against *An. tessellatus*. *M. anisopliae* isolate also showed good larvicidal activity against *Ae. aegypti* (ED₅₀ = 1.099×10^5 spore/mL) and *Cx. quinquefasciatus* (ED₅₀ = 1.634×10^4 spore/mL).

The results of this study indicated that the spores of isolated *Metarhizium anisopliae* strain could be used as a useful biocontrol agent against the larvae of vector mosquitoes.

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