

COMPARATIVE EVALUATION OF MYCOBIOTA OF *Aedes albopictus* AND *Culex quinquefasciatus* LARVAE AND LARVICIDAL POTENTIAL OF ASSOCIATED ENTOMOPATHOGENIC FUNGI

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Fungi influence mosquito survival, development, and population dynamics through symbiotic to pathogenic interactions. This study aimed to characterise and compare the fungal communities associated with larvae of *Aedes* and *Culex* mosquitoes, and to evaluate the entomopathogenic potential of common fungal species isolated from both mosquito genera. *Aedes albopictus* and *Culex quinquefasciatus* larvae were collected from natural and artificial breeding sites from Kandy and Galle districts. Fungi associated with the external surfaces and the internal organs of the collected larvae ($n = 240$) were cultured using potato dextrose agar (PDA). Isolated fungi were identified morphologically. Three fungal species, (*Aspergillus fumigatus*, *A. niger*, *Cladosporium* sp), which were common to both larval species, were used to assess the entomopathogenicity. Larval bioassays were conducted with conidial suspensions of each fungus ($1 \times 10^7 - 1 \times 10^3$ conidia mL⁻¹), and mortalities were reported after 24 h to determine the lethal concentrations (LC₅₀ and LC₉₀). Nine fungal species were isolated from *Aedes* larvae, with *Aspergillus fumigatus*, and *Cladosporium* sp. were the most prominent. Twenty fungal species were isolated from *Culex* larvae, with *A. fumigatus*, *Cladosporium* sp, and *Trichoderma* sp. being the most abundant. Six fungal species, *A. fumigatus*, *A. niger*, *Cladosporium* sp., *Curvularia* sp., *Fusarium* sp., and *Penicillium* sp. were common to both *Aedes* and *Culex* larvae, while *Rhizopus* sp., *Trichoderma* sp., and *Trichothecium* sp. were found only from *Culex* larvae. *Acremonium* sp. was found only from *Aedes* larvae. *Aspergillus niger* showed significantly higher larvicidal activity against *Cx. quinquefasciatus* larvae (LC₅₀ = 3.47×10^5 conidia mL⁻¹) compared *Ae. albopictus* (LC₅₀ = 7.94×10^5 conidia mL⁻¹) ($p = 0.0495$; $H = 3.86$). *Aspergillus fumigatus* (LC₅₀ = 1.23×10^6 conidia mL⁻¹) and *Cladosporium* sp. (LC₅₀ = 1.78×10^5 conidia mL⁻¹) showed larvicidal activity only against *Cx. quinquefasciatus*. The outcomes reported a difference in the number of fungal species and the composition between *Aedes* and *Culex* larvae, with *Aspergillus niger* showing the strongest larvicidal effect.

Keywords: *Aedes albopictus*, *Culex quinquefasciatus*, Entomopathogenic potential, Fungi, Mosquito microbiome