

Comparative Effect of Parasitism of Ciliated Protists Associated with Selected Vector Mosquito Larvae in Selected Rice Field Habitats in Ganewatte, Kurunegala District, Sri Lanka

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Mosquito breeding sites provide habitats for diversifying naturally occurring microbiota and favour different types of interactions including parasitism. This study was carried out to determine the natural occurrence of ciliated protist parasites associated with selected vector mosquito species inhabiting rice fields in Ganewattha area in Kurunegala district in Sri Lanka and to compare their parasitic effects on the selected vector mosquito larvae. Mosquito samples were collected from five rice field sites during the period from June to December 2020. The samples were observed for epibionts/parasitic infections under the microscope. Moribund or dead mosquito larvae in each sample collection were observed for internal parasitic infections. A comparative study was carried out to determine the lethal effect of ciliated organisms on *Culex tritaeniorhynchus* (n=50) and *Culex gelidus* larvae (n=50) in replicated trials (R=3). The minimum number of *V. microstoma* that cause a lethal effect on *Cx. tritaeniorhynchus* third instar larvae (n=100) was determined by a bioassay with ten replicates and two controls per each replicate. A total of 1650 third instar mosquito larvae of *Culex tritaeniorhynchus* (62.8%) and *Culex gelidus* (37.2%) were collected in this study. Ciliated protists namely *Vorticella microstoma*, *Zoothamnium* spp. and *Chilodonella* spp. associated with both species of mosquito larvae were identified. Results revealed that *V. microstoma* has the potential of infection to cause 71.33 (± 5.23) mean percentage mortality of *Cx. tritaeniorhynchus* larvae. A minimum of 1000 *V. microstoma* is required to kill a third instar larva of *Cx. tritaeniorhynchus* at 69.60 (± 2.40) hours of exposure. *Culex gelidus* larvae showed only 41.33 (± 3.43) mean percentage mortality. This study concludes that *V. microstoma* is the most successful ciliated parasite as a killing agent of *Culex tritaeniorhynchus* vector mosquito larvae. Their abundance and effectiveness may contribute to develop them as an effective bio-controlling agent in the future.

Keywords: *Culex*, Ciliated parasites, *Vorticella*, *Zoothamnium*, *Chilodonella*