

Antagonist Potential of *Vorticella microstoma* on the larval development of *Culex gelidus* and *Aedes aegypti*

H.A.K.Ranasinghe¹, L.D. Amarasinghe²

Selection of effective biological agents which can suppress the growth of immature stages of mosquito vectors has drawn a wide attention in disease control programmes. *Vorticella microstoma* is a parasitic ciliate which has an ability to parasitize on larval stages of mosquitoes and inhibit their growth. However, the potential antagonist activity has not been evaluated in detail in Sri Lanka. Fifteen each of first, second, and third instar larvae of *Cx. gelidus* and *Ae. aegypti* were placed in separate *V. microstoma* culture bottles at room temperature (27 ± 2 °C) and mortality rate of mosquito larvae was observed after 48 h. Bioassay was done in completely randomized design with controls. The first, second, and third instar larvae of *Cx. gelidus* were allowed to be infested with the trophont stage of *V. microstoma*. Heavily infested larvae with *V. microstoma* were identified by the presence of parasites attached all over the body surface. *V. microstoma* trophonts did not usually attach to siphon region of mosquito larvae when they are alive. None of the instar levels of *Ae. aegypti* showed susceptible to infection with *V. microstoma*. In the first instar larvae of *Cx. gelidus*, thorax and the abdominal segments had the attachment of 30–35 trophonts of *V. microstoma*, whereas 2–4 trophonts had attached to the anal papillae. Higher densities of *V. microstoma* were found in abdominal segments of second instar larvae of *Cx. gelidus*, whereas total of 45–50 trophonts had attached to thoracic region and abdominal segments. Fifty to fifty-five trophonts of *V. microstoma* had attached to third instar larvae of *Cx. gelidus*, with higher densities in the anal papillae followed by abdominal segments; in the anal papillae, 20–25 trophonts were found to be attached. *V. microstoma* infection was positively correlated with the body size of mosquito larvae. The percentage mortality of the first, second, and third instar larvae of *Cx. gelidus* did not significantly differ from each other (One-Way ANOVA: IBM SPSS Statistic Software, $P < 0.05$). Therefore, the study results would be a new avenue to work on environmentally agreeable manner in reducing the *Cx. gelidus* vector mosquito populations.

Keywords: Aedes, Ciliate, Culex, Trophont, Vorticella microstoma

Acknowledgment: This work was supported by the National Science Foundation of Sri Lanka under the research grant NSF/2017/EB/02.

¹ Department of Zoology and Environmental Management, University of Kelaniya, Sri Lanka; achinikoshilaa@gmail.com

² Department of Zoology and Environmental Management, University of Kelaniya, Sri Lanka