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Predatory efficacy of selected Dragonfly nymphs on *Aedes aegypti* larvae under laboratory settings in Sri Lanka

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Inefficiencies of chemical and mechanical based vector control methods have influenced the relevant vector controlling authorities to seek for alternative and efficient methods for management of *Aedes aegypti* and *Ae. albopictus* densities. Dragonflies, that remain as one of the most efficient predators of aquatic ecosystems, offer a sustainable and ecofriendly approach to maintaining low vector densities through biological control. Regardless of the high diversity and abundance of dragonflies, their potential for controlling *Aedes* vectors remains un-investigated in Sri Lanka. Therefore, the current study attempted to evaluate the predatory efficacy of selected wild caught dragonfly species on *Ae. aegypti* under laboratory conditions. Dragonfly nymphs were collected from different aquatic ecosystems in the Belihul Oya area and were identified at the species level by using standard morphological keys. Groups of 200 *Ae.aegypti* larvae (4^{th} instar) were introduced into glass tanks containing one grown dragonfly nymph of individual dragonfly species, separately and the number of remaining larvae were enumerated at 3 hour intervals within a duration of 24 hours. Five replicates were conducted and the average number of larvae consumed by a single dragonfly nymph was calculated for each species. General Linear Modelling technique (GLM) followed by Tukey's pair-wise comparison was used to identify the predatory efficacies on *Ae. aegypti* larvae of the dragonfliesstudied. Five Dragonfly species, namely *Anax indicus, Gynacantha dravida, Orthetrum sabina sabina, Pantala flavescens* and *Tholymis tillarga* were evaluated for the predatory efficacy. *A. indicus* (110.0 ± 7.1 per day) indicated the highest predation rate, followed by *Pantala flavescens* (54.1 ± 5.1), while *Tholymis tillarga* (23.5 ± 2.5) was characterized by the lowest. The predation rates of different dragonfly species varied significantly ($p < 0.05$ at 55 level of significance). Based on the findings, both *A. indicus* and *P. flavescens* may be recommended as potential candidates for biological controlling of *Aedes* vectors in Sri Lanka. Further studies on the predatory efficacy of the above dragonflies under semi-field and field conditions could be suggested.

Keywords: *Aedes*, Dengue, Dragonfly, Biological Control

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