ABSTRACT

The predatory capacity of two local populations of copepods, *Acanthocyclops* sp. and *Mesocyclops leuckarti* collected from used tires and an artificial pond, was evaluated in laboratory for the first time in Pakistan as a biological control agent for first and second instars of *Aedes* aegypti. Both of these species feed on immature stages of *Aedes aegypti* larvae. However, *Mesocyclops leuckarti* was found as an efficient predator killed/consumed mean 26 larvae per day as compared to 5.3 larvae by *Acanthocyclops* sp. ANOVA indicated a highly significant increase in perccent mortality of these larvae by *Mesocyclops leuckarti* as compared to *Acanthocyclops* sp. ($p=0.00$) when individual copepods were allowed to feed on variable densities of larvae from 10 to 100. Regarding long term effectivity, *Mesocyclops leuckarti* showed 90% accumulative mortality with 10 larval density post 48 hour exposure as compared to 23.3 by *Acanthocyclops* sp. which do not feed after 24 hours of exposure. In general, *Mesocyclops leuckarti* was 6X more efficient where 4 copepods cause 100% mortality as compared to 25 *Acanthocyclops* sp. causing 63% mortality of first instar *Aedes aegypti* in small containers post 24 hour exposure. Using large sized containers (2 Liters capacity), the same number of copepods (25) caused 7.3 and 100% mortality by *Acanthocyclops* sp. and *Mesocyclops leuckarti* respectively post 24 hour exposure indicating that predatory efficiency of both species of copepods decreases in large containers by 9 and 7 folds respectively. In addition, predation capacity of both copepod species was significantly reduced ($p<0.05$) in the presence of alternative food. Current study evaluated that *Mesocyclops leuckarti* was an efficient predator of first to second instar *Aedes aegypti* in laboratory. However, predation capacity/efficiency of this species is needed to test in field trials to control wild population of larvae in natural container. Although, the *Acanthocyclops* sp. was less effective for the control of *Aedes aegypti* larvae, it could be used in combination with other biological control agents in the field.

Keywords: Copepods, dengue, *Aedes aegypti, Mesocyclops leuckarti, Acanthocyclops* sp., biological control, mortality.