

## ABSTRACT

The present study evaluated an integrated control of dengue vector *Aedes aegypti* by using two biological control agents: a local species of *Mesocyclops ogunnus* and *Bacillus thuringiensis israelensis* (WDG). *Mesocyclops ogunnus* was first time used in integrated control program against *Aedes aegypti* larvae in Lahore, Pakistan. In laboratory single species *Mesocyclops* culture was prepared using pure stock culture of *Paramecium* and *Chilomonas*. Predatory capacity of *Mesocyclops ogunnus* was evaluated in small (200 ml, 1 liter) and large (12 and 15 liters) size containers by increasing larval density from 25-300. The best predatory ratio 100% was evaluated as 1:1-1:7 in 200 ml/1 liter and 1:1-1:3, 1:1-1:2 in 12 and 15 liters containers respectively. These results indicated that the predatory capacity was effected by the increasing size of container, as the interaction of predator with prey reduce in large size containers. Predatory capacity/ rate of *Mesocyclops ogunnus* when evaluated in 200 ml container by increasing larval density from 10-100 for 24 hours post exposure, female *Mesocyclops ogunnus* was found 33-13% more larvivorous than male with 10-100 larval density respectively. The mean predatory capacity/rate by *Mesocyclops ogunnus* female was evaluated 26 at 50 larval density for 24 hours post exposure. However, ANOVA indicated no significant difference between male and female *Mesocyclops ogunnus*. When *Mesocyclops ogunnus* integrated with *Bti* (0.1-0.01 ppm) caused 100% larval mortality as compared to 100-74% with *Bti* alone for 72 hours post exposure. Result indicated that low concentration (0.01 ppm) of *Bti* was also effective to kill 100% larvae when integrated with single female *Mesocyclops ogunnus*. In long term integration two concentrations 0.1 and 0.01 ppm of *Bti* (WDG) caused 100-24 and 34-12% larval mortality as compared to 100-88% and 100-28% when used with single *Mesocyclops ogunnus* respectively two weeks post exposure. In conclusion, *Mesocyclops ogunnus* have high potential for biological control agent and predatory

capacity/rate was enhanced when integrated with *Bti* (WDG) against *Aedes aegypti* first instars: an important vector of dengue in Pakistan.