Section A

101/A

Efficacy of *Bacillus thurengiensis* SH-14 *(Bt)* against *Aedes aegypti* (dengue vector) in water storage containers of Central Sri Lanka

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An intervention study was carried out in August 2010 in the Gampola Urban Council area of the district of Kandy to determine the efficacy of *Bacillus thurengiensis (Bt)* SH-14 (600 UTI/mg) against *Aedes aegypti* larvae in ground level cement-lined water storage tanks. Six water storage tanks (volume 50–1050 litres of water) with 21–115 (mean=58.8) *Aedes aegypti* larvae were selected as experimental tanks. Pre-intervention larval counts were made in each experimental tank by observation and counting of the larvae with the naked eye. Following this, *Bt* was applied as the intervention to the tanks at the rate of 20 drops of *Bt* in 50 litres of water (recommended dosage by the producer). Simultaneously, 6 other tanks, each containing 50 litres of water and 100 *Aedes aegypti* larvae (2nd, 3rd and 4th instars) that were collected from ovi-position traps in the same area were kept as a control to the experiment. Post-intervention larval counts were made after 48 hours of *Bt* application in both the test and control tanks. The Mulla's formula was applied to determine the percent reduction of larvae in the post intervention period as compared to that in the pre-intervention period.

In the pre-intervention larval survey of the 6 experimental tanks, 5 were positive for 2rd, 3rd and 4th instar larvae of *Aedes aegypti* and 1 for all instar larvae of *Aedes aegypti*. The number of larvae in the tanks varied from 21 to 115 with a mean of 58.8. In the post-intervention survey, of the 6 experimental tanks, 3 had neither larvae nor pupae; 2 remained positive for only pupae; and 1 for both larvae and pupae of *Aedes aegypti*. 46 (13%) larvae were pupated and the number of larvae/ pupae varied between 0-63 with the mean of 15.3. In the control tanks, all larvae survived with pupation of 65 (10.8%) larvae. There was a 74% reduction of larvae in the *Bt* treated tanks and zero reduction in the controls. This study shows that *Bt* has a high efficacy against *Aedes aegypti* larvae. However, pupation of a considerable proportion of larvae limits its success as a vector control tool against the dengue vector *Aedes aegypti.*

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