

Testing the Effectiveness of Commercially Available *Bacillus thuringiensis* with Local Mosquito Species in Jaffna District

Kannathasan, S.

Department of pathology, Faculty of Medicine, University of Jaffna, Sri Lanka.

Among the methods used to control mosquito, the biological control is preferred to chemical methods, as they are environmentally friendly, less resistance and cheap. The most widely tried biological agent by the scientist is the spore-forming *Bacillus*. Among those *Bacillus* species, *Bacillus thuringiensis* and *Bacillus sphaericus* are more popular. "BACTIVEC" is a commercially available preparation of *Bacillus thuringiensis israeliensis* (LABIOFAM SA, Cuba). The objective of this study was to find the effectiveness of commercially available *Bacillus thuringiensis* on mosquito spp. in Jaffna district. Mosquito larvae were collected randomly in Jaffna district with the help of entomological team, A.M.C., Jaffna. They were identified as *Anopheline*, *Culex* and *Aedes* based on their morphology. These larvae were bred in pure lines and were used in this experiment. Three beakers each containing 360ml of tap water and 0.5g broiler meal were used. Into each beaker 10 *Anopheline* larvae were added. Into the first beaker, used as the control, 40ml of tap water was added. In to the second beaker 20ml of tap water with 20ml of "BACTIVEC" were added (0.5%). 40ml of "BACTIVEC" were added to the third beaker (10%). The samples were incubated at room temperature and the viability of the larvae was monitored. This experiment was repeated three times. Similar experiment was repeated with *Culex* and *Aedes* larvae. Under laboratory controlled conditions larvae of all three mosquitoes showed 100% survival up to 78h. When the concentration recommended by LABIOFAM SA, Cuba was used, 90% of *Anophelines* and *Aedes* survived at 48 and 6h respectively while *Culex* retained 10% of its original viability at 6h. *Anophelines* did not show any change in the viability beyond 90% till 78h but *Aedes* retained 90% of its original viability till 30h and showed a drop to 80% at 48h and this viability was retained till 78h. *Culex* lost its total viability at 24h. When the concentration of "BACTIVEC" used was double the concentration that was recommended by LABIOFAM SA, Cuba, *Anophelines* and *Aedes* showed 90% of their viability at 6h and *Anophelines* retained 90% of its viability for 78h while *Aedes* showed 80% of the viability till 30h and thereafter retained 70% of the viability till 78h. *Culex* lost all its viability within 6h. This study indicates that the commercially available *Bacillus thuringiensis* is not active at the concentration recommended by the LABIOFAM SA, Cuba for *Anophelines*, and *Aedes* while it is useful to control *Culex* at the concentration recommended by LABIOFAM SA, Cuba. This study opens up an area to isolate more effective *Bacillus thuringiensis* locally, to effectively control *Anophelines*, and *Aedes*, which are mostly important in transmitting malaria and dengue respectively.