ABSTRACT

Dengue is a growing public health problem in many tropical and subtropical countries worldwide. At present the only method of controlling or preventing the disease is to eliminate its vectors *Aedes aegypti* and *Aedes albopictus*. In current study *Bacillus thuringiensis* var. *israelensis* Technical Powder (Vectobac 5000 ITU /mg), WDG (Water dispersible granules) 3000 ITU mg and *Bacillus sphaericus* (Vectlex 2363 ITU /mg) were evaluated for the potential control of dengue vector, wild caught laboratory reared *Aedes albopictus* (early 4^{th} instar) larvae along with pupae / adults emergence inhibition in laboratory and field conditions. Laboratory bioassays were carried out with seven different concentrations ranging from 100 – 0.0001 ppm. LC_{50} - LC_{95} ranged between 0.047 – 0.28 for *Bti* TP, 0.025 – 0.091 for *Bti* WDG and 0.37 – 1.5 for *Bsph* 48 hours post exposure indicated that early 4^{th} instar larvae of *Aedes albopictus* were most susceptible against *Bti* WDG and least susceptible against *Bsph* in laboratory. Pupae / adult emergence was also completely inhibited upto 1 ppm in *Bti* TP and *Bti* WDG in laboratory on the base of laboratory results *Bsph* was not recommended to use in the field for *Aedes albopictus* control. In outdoor conditions bioefficacy and residual activities of *Bti* TP and WDG were evaluated with various concentrations in two types of water storage containers i-e plastic container and used tyres, constitute vast developmental sites for *Aedes* mosquitoes in urban / semi urban areas. Maximum residual activity of *Bti* TP was 35 days against 2.4 ppm in plastic containers and minimum 14 days against 0.3 ppm in used tyres as compared to *Bti* WDG observed in plastic containers for 35 days against 0.26 ppm and minimum residual effect of 14 days with 0.05 ppm in used tyres. In general *Bti* WDG has 10 – 12 X more residual effect as compared to *Bti* TP in both types of containers. In comparison of two types of containers residual activity of *Bti* TP and WDG was low in used tyres as compare to plastic containers with respect to larval mortalities and pupae / adult emergence inhibition. However, there was no significant difference ($P > 0.05$) between two types of containers.