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. israeensis 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 4th 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. LC50 - LC95 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 4th 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.