EFFICACY OF *BACILLUS THURINGIENSIS ISRAELENSIS*, VECTOBAC® WG AND DT, FORMULATIONS AGAINST DENGUE MOSQUITO VECTORS IN CEMENT POTABLE WATER JARS IN CAMBODIA

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Abstract. This study reports the evaluation of *Bacillus thuringiensis israelensis* (*Bti*), a biological larvicide, in cement jars holding river, well and rain water. Two *Bti* formulations, VectoBac WG® and VectoBac DT®, were evaluated in a village in Phnom Penh. Thirty-one households with cement jars supporting the colonization of *Ae.aegypti* immatures were chosen. In each house 3 jars were aligned next to each another and filled with the same type of water. One of the 3 jars was treated with VectoBac WG® at 0.4 g per 50 liters, a second jar was treated with VectoBac DT® at 1 tablet per 50 liters, and a third jar was an untreated control (UTC). The jars were not covered, kept outdoors and not subjected to water exchange activity. The efficacy of VectoBac® to control natural *Ae.aegypti* infestation was measured by *Ae.aegypti* pupae surveillance, conducted 3 days per week for 3 months post-treatment (June - September 2004). All pupae were removed, allowed to emerge in the Cambodia National Malaria Center insectarium and the emerged adults were identified and counted. The VectoBac treatments were more effective in river water, followed by well and rain water. The VectoBac treatments significantly reduced the pupae numbers for a minimum of 3 months in the river water and 2.5 months in the well water ($p<0.05$). In the rain water, the pupae densities in the VectoBac WG® and DT® treated jars were not significantly different from the untreated jars, although the treated jars yielded 2.0 to 5.2 fold less pupae, respectively, than in the untreated jars during the 3 months post-treatment. The efficacy of VectoBac WG® to control *Ae.aegypti* was similar to the efficacy of VectoBac DT® in the 3 water types ($p>0.05$). It was also observed that VectoBac WG® and DT® were target specific, without any adverse effects on aquatic predatory insects common in well and rain water. VectoBac WG® and DT® were found to be easy-to-use formulations, with no need to repackage them prior to use in the containers. The amounts of VectoBac WG® and DT® used were 12.5 fold less by weight than temephos (Abate 1.0% SG®).

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