



FIELD TRIALS

Figure 1. Efficacy of a single VectoBac® DT tablet to control *Aedes* larvae in bamboo pole holders (≤ 50 L volume) in Singapore.

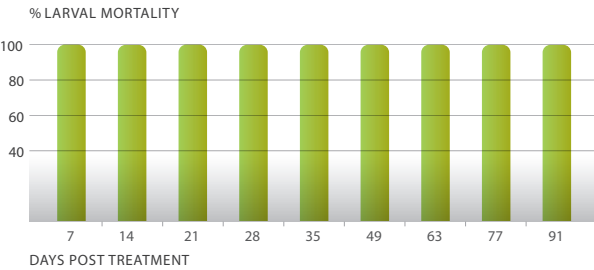


Figure 2. Efficacy of a single VectoBac® DT tablet to control *Aedes* larvae in earthen containers (50 L volume) with daily 50 % water removal and replacement in Malaysia.

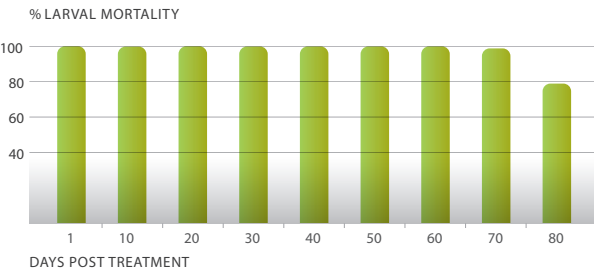
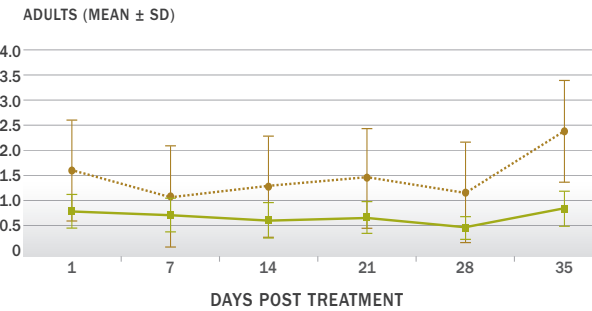
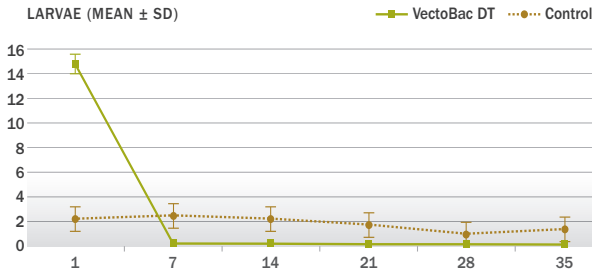


Figure 3. Effect of VectoBac® DT on *Aedes aegypti* larvae and adults. One tablet/50 liters for initial application with subsequent weekly treatments of 1 tablet/200 liters; cement water storage tanks in Colombia



CONTACT US

To learn more about Valent BioSciences call **800.968.4700** or visit us at publichealth.valentbiosciences.com

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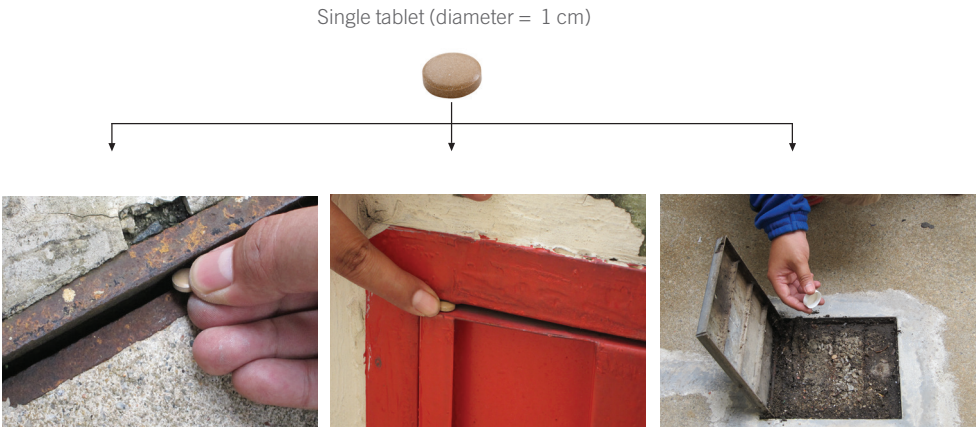
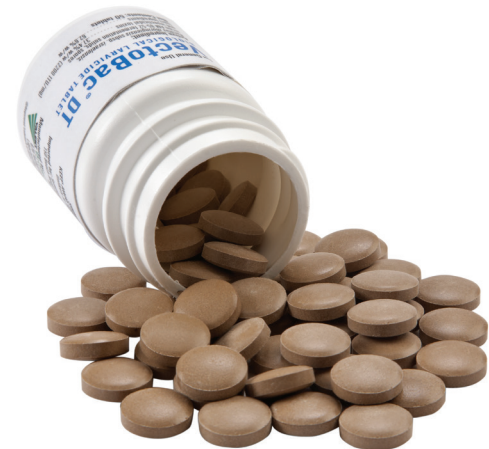
TECHNICAL USE BULLETIN

VectoBac® DT
Biological Larvicide





VectoBac® DT is a tablet formulation of *Bacillus thuringiensis* subsp. *israelensis* (Bti, Strain AM65-52) designed for direct application to water containers for control of disease vectors such as *Aedes aegypti* and *Aedes albopictus*. This easy to use tablet is designed to provide extended residual control in various types of water collecting containers. VectoBac® DT contains the same Bti strain that has completed the World Health Organization Pesticide Evaluation Scheme and contains no biological contaminants.



VECTOBAC® DT

VectoBac DT is a direct application tablet formulation of *Bacillus thuringiensis* subsp. *israelensis* (Bti, Strain AM65-52). The product has a potency of 2,200 ITU/mg against *Aedes aegypti* larvae. It is designed to control disease vectors, such as *Aedes aegypti* and *Aedes albopictus*, in various types of water containers.

VectoBac DT contains the same Bti strain that has completed the World Health Organization Pesticide Evaluation Scheme (review was for the water dispersible granule [WDG] formulation).



HISTORY

Bacillus thuringiensis subsp. *israelensis* (Bti) is a naturally occurring, soil bacterium found in soil and aquatic environments throughout the world. At the time of sporulation, Bti produces a highly specific delta endotoxin, which is only toxic to larvae of mosquitoes, black flies and closely related flies upon ingestion. During 30 years of field use in a variety of settings around the globe, Bti has been shown to provide effective, reliable, and environmentally compatible control of mosquito larvae. In addition to Bti's effectiveness, it has an excellent safety record and very low mammalian toxicity: LD50 values for both oral and dermal toxicity are more than 30,000 mg/kg. The mosquitocidal crystal proteins and vegetative cells of Bti administered by different routes have been found to be non-pathogenic and non-toxic to various animal species in maximum challenge tests.¹ WHO concluded Bti is safe for use in aquatic environments, including drinking water reservoirs, for the control of mosquito, black fly and nuisance insect larvae.²

1 Siegel JP and Shaddock JA. 1990. Mammalian safety of *Bacillus thuringiensis* subsp. *israelensis*. In: Bacterial Control of Mosquitoes and Black Flies. (de Barjac H, Sutherland DJ eds). pp. 202-220. Unwin Hyman Ltd. London.

2 World Health Organization (WHO). 2004. Report on the 7th WHOPES Working Group Meeting. Geneva, Switzerland: WHO.

MODE OF ACTION

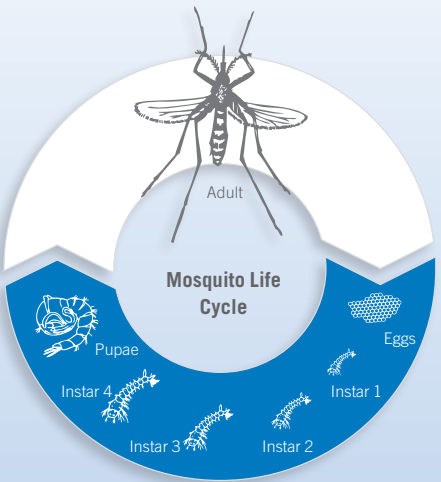
Bti produces complex crystal proteins known as protoxins during sporulation. When these proteins are applied to larval habitats of mosquitoes, the mosquito larvae ingest them by filter feeding. The crystal proteins are solubilized by the alkaline juices in the larval midgut and are cleaved by the midgut proteases, yielding active peptide toxins called delta-endotoxins. The delta-endotoxins cause the formation of holes in the midgut cell wall, leading to immediate lysis of cells and larvae death within 24 hours.

CONTROLLING *AEDES* WITH VECTOBAC® DT

- The larval stages of mosquitoes are highly susceptible to Bti toxins.
- **VectoBac DT** consists of the same Bti strain and food grade inert ingredients found in VectoBac WDG.
- **VectoBac DT** formulation is specifically designed to deliver Bti toxins into the feeding zone of *Aedes* larvae, which are at the sides and base of artificial containers.
- **VectoBac DT** is fact-acting upon first application.

AEDES AEGYPTI AND *AEDES ALBOPICTUS*

- *Aedes aegypti* and *Aedes albopictus* are two of the world's most important disease vectors.
- *Aedes* larvae can breed in both artificial and natural containers.



- Tablet size and application rate provides greater flexibility for small containers.
- Tablet is small and compact, making it easy to use by field technicians and allowing for ease of application into containers with narrow openings.
- A single tablet can be applied to dry containers or containers holding water volumes of ≤ 50 L (13 gallons). Retreat at label rates as required when pupae appear.

