

SPRAY APPLICATION OF *BACILLUS THURINGIENSIS ISRAELENSIS* (BTI STRAIN AM65-52) AGAINST *Aedes Aegypti* (L.) AND *Ae. Albopictus* SKUSE POPULATIONS AND IMPACT ON DENGUE TRANSMISSION IN A DENGUE ENDEMIC RESIDENTIAL SITE IN MALAYSIA

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Abstract. A one year study was conducted to evaluate the impact of spray application of *Bacillus thuringiensis israelensis* (Bti), strain AM65-52 on vector populations and dengue transmission in a dengue endemic state in Malaysia. Residential sites with similar populations of *Aedes aegypti* (L.) and *Aedes albopictus* Skuse were studied. One site was treated with spray application of Bti into all outdoor target vector habitats, which consisted of natural and artificial containers. The other site was not treated. The impact of spray application was measured with an indoor and outdoor ovitrap index (OI) and epidemiologic data. Significant reductions in both *Ae. aegypti* and *Ae. albopictus*, OI were observed both indoors and outdoors, in treated sites compared to untreated sites ($p < 0.05$). OI reduction was achieved over time in the treated area. The OI was suppressed to below 10%. This was maintained for 4 weeks into the post-treatment phase. The outdoor OI at the untreated site remained at more than 40% for 38 weeks during the evaluation period. One dengue case occurred at the Bti treatment site at the beginning of the treatment phase, but no further cases were detected during the remainder of the treatment phase. However, there was an ongoing dengue outbreak in the untreated area with 15 serologically confirmed cases during weeks 37-54. Intensive fogging operations with pyrethroids at the untreated (Bti) site had a positive impact on *Ae. albopictus*, but not on *Ae. aegypti*.

Keywords: *Aedes aegypti*, *Aedes albopictus*, *Bacillus thuringiensis israelensis*, dengue vectors, interruption of dengue transmission, larviciding, ovitrap surveillance

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