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CRYSTAL PROTEIN

CHANITA JITTALEELA : THE FATE OF *BACILLUS THURINGIENSIS* SUBSP. *ISRAELENSIS* AND *BACILLUS THURINGIENSIS* SUBSP. *KURSTAKI* ENDOSPORES DURING THE INFECTION OF *AEDES AEGYPTI* LARVAE. THESIS ADVISORS: CHANPEN WIWAT, Ph.D., AMARET BHUMIRATANA, Ph.D., SOMSAK PANTUWATANA, Ph.D., WICHET LEELAMANIT, Ph.D. 122 P. ISBN 974-664-364-9

Aedes aegypti larvae were infected with *Bacillus thuringiensis* streptomycin resistant strains. Results found that they could complete the growth cycle (spore germination, multiplication and sporulation) in the larval body. The numbers of cells and spores of living and dead larvae were estimated by plating homogenized larvae on nutrient agar supplemented with mineral salts and streptomycin (50 µg/ml). The spores of *B.t.i.* and *B.t.k.* could germinate and propagate in the larvae after 12 hrs post-feeding causing the total cells of *B.t.i.* and *B.t.k.* in the larvae to increase from 1.15×10^3 to 1.99×10^5 cfu/larva and 1.90×10^3 to 2.49×10^5 cfu/larva, respectively. The spores increased to be 1.41×10^5 and 1.94×10^5 cfu/larva in *B.t.i.* and *B.t.k.* at 48 hrs. Gene transfer between *B.t.i.* (rif^R) and *B.t.k.* (str^R) was studied by *in vivo* conjugation in *A. aegypti* larvae. The results found that the combination of *B.t.i.* and *B.t.k.* at concentration of 9.85×10^4 and 1.13×10^5 cfu/ml caused 13.3% mortality of larvae and the number of transconjugants was found to be 43 colonies. PCR technique was used to detect the presence of *cry 1* and *cry 4* in these transconjugants. *B.t.k.* and *B.t.i.* were used as positive controls throughout the experiment. *cry 1* and *cry 4* were found in transconjugants No. 1, 25, 35, 37, 39, 40 and 44. The toxicity of these transconjugants were tested toward *A. aegypti* larvae. LC₅₀'s of transconjugants No. 1, 25, 35, 37 and 39 were approximately 4.69×10^1 , 9.23×10^1 , 6.17×10^1 , 4.14×10^1 and 2.21×10^1 cfu/ml, respectively. These LC₅₀'s were lower than *B.t.i.* (rif^R) (9.35×10^2 cfu/ml) and *B.t.k.* (str^R) (7.74×10^2 cfu/ml) but LC₅₀'s of transconjugants No. 40 and 44 were approximately 4.66×10^5 and 4.8×10^4 cfu/ml, which was higher than *B.t.i.* and *B.t.k.*.