

Characterization of Acetylcholinesterase in the Oriental Tobacco Budworm, *Helicoverpa assulta*

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Acetylcholinesterase (AChE), the target site of organophosphate and carbamate insecticides, plays an important role in the transmission of nerve impulse in the insect nervous system. AChE activity of the Oriental tobacco budworm (*Helicoverpa assulta*) was higher in the head than in thorax and abdomen of the adult and gradually increased through the developmental stages. The optimum pH and temperature for the purified AChE was 8.5 and 35°C, respectively. The affinity for acetylthiocholine (K_m) and the activity (V_{max}) of AChE were evaluated to be 0.05 mM and 2.1×10^{-2} unit/min, respectively. The AChE of *H. assulta* belongs to the *Drosophila melanogaster* Ace-orthologous AChE subfamily and its deduced protein sequence showed the highest homology to AChE of the cotton bollworm, *Helicoverpa armigera*. Six amino acid differences were identified, suggesting that there is a polymorphism in AChE gene in this insect.