

# Resistance Mechanism of the Diamondback Moth, *Plutella xylostella* (L.) against Prothiofos

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A prothiofos-resistant diamondback moth (DBM-R) strain has been selected by growing them under the pressure of the organophosphate over 100 generations. The DBM-R strain was up to 70-fold resistant to prothiofos than a susceptible strain (DBM-S) in leaf-dipping assay. We also examined enzyme activities including acetylcholinesterase (AChE), general esterases and glutathione S-transferase (GST). AChE activity of adult head in the DBM-R strain exhibited over two times higher than that of the DBM-S strain, whereas there were no significant differences in the other two enzyme activities. The nucleotide sequence analysis of the AChE gene in DBM-R and DBM-S strain revealed one or two nucleotide changes in several positions, resulting in the substitution of a few amino acids. These results suggest that the increase of AChE activity and the substitution of amino acids in the DBM-R strain are associated with the development of prothiofos-resistance.