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Permethrin Resistance Mechanisms in the Beet Armyworm (*Spodoptera exigua* (Hübner))

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Abstract:
The toxicity of pyrethroids was evaluated in a permethrin-susceptible (TS) and a permethrin-resistant (TR) strain of the beet armyworm, *Spodoptera exigua* (Hübner). The TR-strain showed 92-fold more resistance to permethrin and higher cross-resistance (97- and 130-fold, respectively) to cypermethrin and fenvalerate than the TS-strain. Moreover, all larval instars exhibited greater susceptibility to permethrin in the TS-strain than TR-strain. There was very little difference in susceptibility between the two strains with respect to chlorphenapyr. The effect of piperonyl butoxide on the toxicity of permethrin indicated that the resistance of the TR-strain is due to enhanced metabolic detoxification by cytochrome P450 monooxygenase. © Pesticide Science Society of Japan

Keywords:
Spodoptera exigua, insecticide resistance, permethrin, cytochrome P450 monooxygenase

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