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Mode of Action of Nonsteroidal Ecdysone Agonists, Diacylhydrazine Analogs

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Abstract:
The binding affinity of insect molting hormone agonists, *N*-*tert*-butyl-*N*,*N*′-diacylhydrazine (DAH) analogs, against the molting hormone receptor proteins (EcR/USP) was measured. For the lepidopteran *Chilo suppressalis*, the receptor-binding activity of DAH analogs correlated linearly with their molting hormonal activity (*in vitro*) and insecticidal activity (*in vivo*). The binding activity of DAH analogs of *C. suppressalis* EcR/USP was higher than that of the dipteran *Drosophila melanogaster* EcR/USP. The binding activity of EcR/USP changed little when USP was exchanged between *C. suppressalis* and *D. melanogaster*. These results suggest that the selective toxicity of DAH analogs toward Lepidoptera is caused by the difference in the structure of EcR, not by that of USP. © Pesticide Science Society of Japan

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ecdysteroids, ecdysone receptor, ultraspiracle, non-steroidal ecdysone agonists, diacylhydrazine analogs, selective toxicity

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