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Study on the mechanism of insecticidal activity through disruption of intracellular calcium homeostasis

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Abstract:
Flubendiamide is a new compound developed as an insecticide with potent activity against lepidopterous pests. The present study demonstrated that the compound possessed insecticidal activity through a specific effect on intracellular Ca^{2+} kinetics, which was signified by pronounced Ca^{2+} pump stimulation. Further study clarified that the compound intrinsically activated the ryanodine-sensitive calcium release channel (ryanodine receptors, RyRs). The results of this study indicated that insect RyR is a promising target molecule for a new insecticide with high selectivity and low toxicity to mammals.

Keywords:
flubendiamide, Ca^{2+} pump, insecticide, benzendicarboxamide

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