# A novel method using Autographa californica multiple nucleopolyhedrovirus for increasing the sensitivity of insecticide through calcium influx in insect cell line



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| Résumé en anglais | Due to an intensive use of chemical insecticides, resistance mechanisms to insecticides together with adverse effects on non-target organisms have been largely reported. Improvement in pest control strategy represents an urgent need to optimize efficiency in the control of pest insects. In this context, a novel method based on the use of insect specific virus applied in combination with chemical insecticide, which could lead to sensitization of the insect target to insecticides is described. Insect virus, the baculovirus Autographa californica multiple nucleopolyhedrovirus (AcMNPV), applied onto Sf9 cells induces an increase of intracellular calcium concentration via extracellular calcium influx. Co-application of AcMNPV with chlorpyrifos-ethyl onto Sf9 cells expressing the key enzyme acetylcholinesterase (AChE), known to be targeted by organophosphate insecticides, increases 1.5-fold the sensitivity of AChE to the insecticide. This effect is correlated with intracellular calcium concentration rise since AcMNPV-induced potentiating insecticide effect is counteracted by pretreatment with the calcium channel blocker, cadmium chloride. Increasing insecticide target sensitivity through intracellular calcium modulation by using insect virus co-applied with a chemical insecticide is a very promising strategy allowing optimization of insecticide treatment while reducing the concentration of insecticides used. |
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**Liens**
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