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RESEARCH ARTICLE

Improved insecticidal activity of a genetically modified baculovirus expressing the immunosuppressive CrV1 protein from a polydnavirus against *Spodoptera exigua*

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ABSTRACT

Recombinant baculoviruses could be used as biological insecticides through the introduction and expression of exogenous genes (such as those coding for proteins) that interfere with metabolism, metamorphosis (toxins, hormones, and enzymes), and immune system of the insects. The CrV1 secreted protein of *Cotesia rubecula* polydnavirus (PDV) is responsible for the actin depolymerisation in haemocytes and the abolishment of immune functions such as phagocytosis and cell spreading, thus allowing the successful embryonic development of the parasitoid wasp. CrV1 cDNA was cloned into C6 strain of *Autographa californica* multiple nucleopolyhedrovirus (AcMNPV-C6-CrV1) under p10 promoter to construct a recombinant virus. The recombinant virus was then tested against the insect pest *Spodoptera exigua*. The recombinant virus expressing CrV1 protein showed significantly lower LC_{50} and shorter LT_{50} as compared with the AcMNPV-C6 wild-type virus. The potential of recombinant baculoviruses expressing PDV genes in relation to their virulence is discussed.

KEYWORDS: Polydnavirus, CrV1 protein, baculoviruses, *Spodoptera exigua*

Additional information

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Review article

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