

Title: Interaction between Cry1Ab and Cry2Ab proteins from *Bacillus thuringiensis* with BBMV's neonate larvae of *Spodoptera frugiperda*

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The bacterium *Bacillus thuringiensis* has great prominence in agriculture, since this behaves as an efficient agent to control insect pests, due to the different expression proteins with insecticidal activity as Cry proteins and others. The Cry proteins are accumulated in crystalline inclusions during the bacterial sporulation. The combination of different *cry* genes that binding in different receptors can enhance the insecticidal activity, delay or prevent the emergence of target pest populations resistant to the action of proteins when used alone. Thus, this work aims to study the toxicity and interaction between Cry1Ab and Cry2Ab proteins from *B. thuringiensis* with BBMV's neonate larvae of *Spodoptera frugiperda*. Heterologous expression of proteins in *Escherichia coli* was induced by increasing the amount of D-6-isopropyl thiogalactopyranoside (IPTG). Cry1Ab and Cry2Ab proteins were extracted and after Cry2Ab purified using an affinity column. The purified Cry2Ab and lysate of Cry1ab were activated by proteolysis using bovine pancreatic trypsin. The active Cry1ab was purified using an ionic exchange column. Then both proteins were biotin labeled. Intestines from *S. frugiperda* fourth instar larvae were dissected and vesicles were prepared using the differential magnesium precipitation method. The vesicles' concentration were determined by the Bradford method. The assays of homologous and heterologous competition between biotin labeled protein Cry1Ab and Cry2Ab were performed with vesicles. Protein lysates were used also bioassays with neonate larvae to determine LC₅₀ of Cry1ab and Cry2ab proteins. The neonate larvae of *S. frugiperda* were more susceptibility to the Cry2Ab than Cry1Ab. No competition was observed between Cry1Ab and Cry2Ab proteins. Results obtained from analyzes of the mode of action these proteins, indicate the combination Cry1Ab and Cry2Ab that could be used in biopesticides for the control these insect pests as well as the handling of the possible emergence of resistance these insects.

Key words: insecticidal proteins, biological control, entomopathogenic bacteria

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