

## Antibacterial Activity of *Bacillus thuringiensis* Crystalline Parasporal Proteins

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**Abstract :** For a long time, the Gram-positive spore-forming bacteria *Bacillus thuringiensis* (Bt) has been widely used in biological control against devastating and disease vectors insects. This is due to the insecticidal activity of its crystalline parasporal inclusion (crystals) predominantly comprised of one or more proteins (Cry and Cyt proteins) also called  $\delta$ -endotoxins, produced during sporulation. The shape and composition of Bt crystals vary among strains and crystalline proteins are extremely varied (more than 475 cry gene were discovered). The insecticidal activity of Bt crystals is very well studied, thus their insecticidal mode of action is well established, however, their antimicrobial effect is largely unknown. The lack of data on the antimicrobial effect of crystalline proteins of Bt and the need for searching new antimicrobial molecules encouraged us to carry out this study. The antibacterial effect of  $\delta$ -endotoxins produced by two Bt strains; a strain isolated from soil at northern of Algeria (Bt 7.2.B), and a strain isolated from a bioinsecticide (*Bacillus thuringiensis* var *aizawai*), activated by proteolysis, was assayed on clinical bacterial strains and ATCC collection ones respectively. Gram positive and negative clinical bacterial strains (*Escherichia coli*, *Klebsiella pneumoniae*, *Pseudomonas aeruginosa*, *Staphylococcus aureus*) were sensitive to activated Bt 72B endotoxins. Similarly, bacterial strains from ATCC collection (*Escherichia coli* ATCC 25922, *Pseudomonas aeruginosa* ATCC 27853, *Staphylococcus aureus* ATCC 25923) were sensitive to activated *B. thuringiensis* var *aizawai*  $\delta$ -endotoxins. The activated  $\delta$ -endotoxins were separated by SDS-PAGE.

**Keywords :** *Bacillus thuringiensis*, crystals, cry proteins,  $\delta$ -endotoxins, antibacterial activity

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