Screening of *cry* gene contents of *Bacillus thuringiensis* strains isolated from avocado orchards in Mexico, and their insecticidal activity towards *Argyrotaenia* sp. (Lepidoptera: Tortricidae) larvae

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Abstract:

Aims: To screen for *Bacillus thuringiensis* strains from avocado orchards in two Mexican states with lepidopteran-specific *cry* gene content and evaluate their insecticidal activity against *Argyrotaenia* sp., an undescribed species present in avocado orchards. Methods and Results: Lepidopteran-active *cry*1, *cry*2 and *cry*9 genes were detected by PCR analysis in 37 isolates. *cry*1 genes were more frequent in Michoacán, but were undetected in Nayarit isolates. *cry*9 and *cry*2 genes were detected in isolates from both states, although *cry*2 genes were less frequent. A variety of crystal shapes were observed among the isolates. According to gene profile, eight isolates were selected and tested against 2-day old *Argyrotaenia* sp. larvae. Standard strain HD-125 caused the highest mortality followed by strain MR-26 from Michoacán at a concentration of 500 μg ml^{-1}, respectively. Conclusions: *Bacillus thuringiensis* strains isolated from avocado orchards exhibit a low toxic activity towards *Argyrotaenia* sp. larvae, in spite of their specific *cry* gene content. Significance and Impact of the Study: Toxic activity of *B. thuringiensis* is not necessarily related to insect pest habitat and neither to specific *cry* gene content associated to other lepidopterans.