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Detection of *Paenibacillus larvae* using tRNACys-PCR on honeybee-collected pollen

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The spread of *Paenibacillus larvae* between apiaries is often associated with the import of colonies and causes considerable economic losses in the apiculture industry. In recent years, the production of honeybee-collected pollen has increased due to its use as the principal food for bumblebee rearing, so that *Paenibacillus larvae* detection is important to the viability of this commercial activity. Early detection of *Paenibacillus larvae* during commercial bumblebee production is one of the principal goals for production facilities in Koppert, Mexico to assure the maintenance of acceptable food quality for bumblebees and to reduce the risk that the bees will serve as insect vectors during pollination in greenhouses. In this study, we developed a strategy for the detection of *Paenibacillus larvae* in bumblebee food using tRNACys-PCR as a rapid and reliable diagnostic procedure. We validated the tRNACys-PCR procedure through analysis of food samples containing honeybee-collected pollen from Mexico, Chile and Holland. Further validation of the procedure was obtained by bacterial identification using MALDITOF-MS and high-throughput sequencing of 16S rRNA genes obtained from enrichment cultures of sporulated bacteria. Thus, the tRNACys-PCR assay could be applied during bumblebee mass rearing as a diagnostic method for quality control of pollen.

Biography

Vicente Daniel Moreno Andrade has completed his Engineering training in Environmental Chemistry in 2016. He is currently pursuing his Master's degree in Environmental Science and Technology in the Autonomous University of Queretaro, Mexico. His research project deals with the characterization of sporulated bacteria from pollen samples by molecular methods such as PCR, MALDITOF-MS and high-throughput sequencing of 16S rRNA genes.

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