MOLECULAR TOOLS TO DETECT THE RESISTANCE OF *CULEX QUINQUEFASCIATUS* TO THE BIOINSECTICIDE *BACILLUS SPHAERICUS*

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The larvicidal action of the entopathogen *Bacillus sphaericus* towards the vector *Culex quinquefasciatus* (Diptera: Culicidae) is due to the binding of the binary toxin to a receptor, the alpha-glucosidase Cqm1, in larvae midgut microvilli. An important resistance mechanism is based in a 19-nucleotide deletion in the cqm1 gene, which prevents the expression of the receptor in the epithelium, and causes high refractoriness. The goal of this work was to develop tools to identify the alleles cqm1/cqm1-d19 and to detect the expression of the receptor in individual larvae. Fourth instar larvae from a susceptible (S) and a high resistant (R) colony reared in the insectariun of CPqAM, were used in this study. PCR reactions were conducted with primers flanking the 19-nucleotide deletion in the cqm1 gene, and an in gel alpha-glucosidase assay was performed to identify the expression of the receptor. The size and sequence of the fragments amplified by PCR clearly distinguished the susceptible and resistant genotypes, from known samples. The enzymatic assays showed that resistant individuals did not display the catalytic band corresponding to the alpha-glucosidase Cqm1, against its presence in susceptible larvae. The tools developed in this work are suitable for monitoring this important resistance mechanism among natural populations.

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