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Research Abstract

Evaluation Of *Bacillus cereus* Chitinases To Control *Fusarium verticillioides* in Maize

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Abstract: Maize is the most important crop in Sinaloa, Mexico and it is attacked by diverse pathogens including *Fusarium verticillioides*. This fungal pathogen is responsible for causing root and stalk rot of maize and causes severe economic losses. Bacteria produce different compounds to inhibit the fungal pathogens, including the enzyme chitinase. The main goal of this work is to prove that in the endophytic *Bacillus cereus* strain (Bc25) the chitinases are involved in the antagonistic mechanism controlling *Fv* development in a maize plant. *Bacillus cereus* produces two chitinases (A and B). We have evaluated two inducers of chitinase activity (colloidal chitin and fungal lysate) and the gene expression level of Chitinases A and B were evaluated. Both chitinases are induced, however, chitinase B showed a higher induction than chitinase A in presence of both inducers. The *Fv* growth inhibition effect observed is possibly attributed to the chitinase production. We also have studied the localization of the bacteria in the root system concluding that it associates endophytically to maize by colonizing the apical zone and vascular vessels of the roots.

Keywords: *Bacillus cereus*, chitinases, expression, antagonism, maize.

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