

**TITLE:** Endophytic *Bacillus* sp isolated from the Caatinga in the *in vitro* control of phytopathogenic fungi

**AUTHORS:** BARROS, Y.C.; SILVA, E.P.; SOUZA, B.C.; JAMBEIRO, I.C.A.; LANDIM, L.F.; SILVA, L.F.C.; SANTOS, A.F.J.

**INSTITUTION:** UNIVERSIDADE DO ESTADO DA BAHIA, JUAZEIRO, BA (AVENIDA EDGARD CHASTINET, CEP 48905-680, JUAZEIRO-BA, BRAZIL).

## **ABSTRACT**

The need for alternative methods to the use of agrochemicals has stimulated studies related to the use of microorganisms as a tool for the biocontrol of phytopathogenic fungi. The mechanisms used for biocontrol are diverse, such as the production of hydrocyanic acid, bacteriocins and antibiotics, competition for space and Fe + 3, in addition to other nutrients, parasitism, induction of resistance and cross protection. Although plants have defense mechanisms against phytopathogens, fungi such as *Rhizopus* sp. and *Aspergillus* sp. present different strategies to dribble these systems and thus cause diseases such as rot in fruits in the post-harvest period. The aim this study was to evaluate the antagonistic activity of endophytic bacteria of the genus *Bacillus* isolated from Caatinga in the control of phytopathogenic fungi. Six endophytic bacteria of the genus *Bacillus* isolated from sisal (*Agave sisalana* P.) were used. The experiment was performed inoculating disks (Ø 5mm) from two isolates of *Rhizopus* sp. in the center of Petri dishes containing TSA medium. For an isolate of *Aspergillus* sp. a platinum loop was used for inoculation in the same medium. Then the bacterial isolates were crossed out at four opposite ends and equidistant in the plates previously inoculated with the phytopathogens. For control only the fungi on the plates were inoculated. All treatments were done in triplicate. The plates were incubated at 28 °C and measuring the diameter mycelial growth was measured daily for 7 days. The means of fungal growth were compared by the Scoot-knott test (p <0.05) using the Sisvar software. All treatments using the bacteria had a significant inhibitory effect against phytopathogens evaluated *in vitro*, except for the *B. megaterium* (FO4.7) against *Rhizopus* sp. with inhibition of only 6 and 14%. In the treatments against *Rhizopus* sp. the most efficient bacterium was *B. licheniformis* (FE3.7) with inhibition rate of 55 and 58%. The *B. subtilis* isolate (FO5.5) presented the highest rate of inhibition (90%) of *Aspergillus* sp. Thus, the inhibitory potential of these endophytic bacteria may provide an alternative tool for biological control against the isolates tested.

**Keywords:** Endophytic bacteria; biocontrol; phytopathogens.