**Title:** ***IN VITRO*** **INFLUENCE OF MAIZE RHIZOBACTERIAL ISOLATES ON MYCELIAL GROWTH, SPORULATION AND SPORE GERMINATION OF AFLATOXINGENIC *Aspergillus flavus***

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**Abstract:** The filamentous fungus *Aspergillus flavus* may attack maize grains and cause mainly quality losses by direct degradation. In addition, this fungus may produce Aflatoxin B1, a hepatotoxic and carcinogenic mycotoxin. Prevention of fungal infection is the only way to guarantee the absence of Aflatoxin B1 on maize grains and biological control is an alternative control method that may be effective and minimize toxicological residues generated by the usage of synthetic fungicides. The objectives of this study were to evaluate the *in vitro* effect of previously isolated *Bacillus* spp. from maize root system on mycelial growth rate, spore production and spore germination and survivability of aflatoxigenic *A. flavus*. Three *Bacillus* sp. isolates that previously presented antifungal ability were tested. To test the influence of these rhizobacteria on *A. flavus* mycelial growth rate (MGR), the isolates were poured into petri dishes containing melted Maize Meal Extract Agar (MMEA). After solidification, agar plugs containing growing mycelium were centrally inoculated and the cultures were incubated. Fungal diameters were measured daily and the mycelial growth rate were determined by linear regression. After the experimental period, the cultures were also used to determine the rhizobacteria effect on the sporulation of *A. flavus*. For that, the number of spores per $cm^2$ of mycelium was determined using a Neubauer Chamber. The influence of *Bacillus* spp. on spore germination was evaluated by inoculating *A. flavus* and rhizobacterial suspensions simultaneously on tubes containing MMEA broth. After treatment period, 200 spores were counted and the percentage of germination was compared with control treatments. These spore suspensions were inoculated after counting, on plates containing DRBC to CFU counts and observe spore survivability. The three rhizobacterial isolates used, named RF69, RP103 and RP242 were able to reduce *A. flavus* MGR by 73, 76 and 78%, respectively. The isolates RP69 and RP103 were able to significantly reduce spore production. All *Bacillus* spp. were capable to reduce spore germination on rates between 70 and 100% and significantly reduce spore viability and survival on comparison to control treatments. The rhizobacterial isolates showed great ability on controlling *A. flavus in vitro* and demonstrated potential to be used as biocontrol agents. *In vivo* and field tests are being conducted to evaluate the isolates control ability on the maize agroecossystem.

**Key-words:** *Bacillus* spp.; Aflatoxin B1; Mycotoxins; *Aspergillus flavus;* Biological control

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