

Title: EFFECT OF CULTURE MEDIA IN THE PRODUCTION OF VOLATILE COMPOUNDS FROM *Bacillus* spp. WITH INHIBITORY ACTION ON *P. citricarpa*

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Abstract:

The citrus industry faces problems with diseases that depreciate the fruit quality and decreases productivity, among them is the Citrus Black Spot, caused by the fungus *Phyllosticta citricarpa*. Because of the harm caused by the use of chemicals to contain the disease, the biological control is a potential option where the *Bacillus* genus is highlighted for presenting great advantage over other antagonists. Therefore, because of the damage caused by the citrus black spot, the increased interest in alternative methods of control and the need for greater understanding of the distinct compounds produced by microorganisms, the objective of this work was to study the effect of different culture media on production of volatile compounds by *Bacillus* spp.. Five different culture media (PDA, NA, TSA, TSB and King B) were tested with 27 strains of *Bacillus* spp., separated in two tests. Divided Polystyrene plates were used, which prevents the contact of the non-volatile exudates produced by the bacteria with the fungus through the culture medium. In one of the sides of the plate, a bacterial isolated disc (5 mm) was grown, on different tested mediums and in the other side a pathogen mycelial disc (5 mm) was cultivated on PDA. The control was consisted of plates containing the fungus in the absence of bacteria. The sealed culture plates were incubated at 26° C with 12-hour photoperiod, with four replicates for each tested medium. Mycelial growth evaluation was done through the mean between two diametrically opposed measurements, when the colony on the control plates reached the edges. For the two trials in this test, a factorial design with two factors and four replications was used. Data were subjected to analysis of variance (ANOVA) and mean comparison was made by the Scott-Knott test at 5% probability. This study showed that the medium used to cultivate *Bacillus* spp. influences the production of volatile organic compounds with inhibitory activity against *P. citricarpa*. In the first experiment, TSA cultivation promoted the highest levels of pathogen inhibition (34-73%), and in the second experiment, the TSB cultivation was responsible for featuring 21-63% inhibition. Among the five tested media, TSA and TSB provided the highest phytopathogen control, indicating that the presence of tryptone, found in both media, is a favorable factor in the production of volatile organic compounds.

Keywords: *Bacillus*, *P. citricarpa*, voláteis

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