

TITLE: VOLATILE ORGANIC COMPOUNDS PRODUCED BY ISOLATES OF THE GENUS *BURKHOLDERIA* SP. AGAINST *MONILIOPHTHORA PERNICIOSA*

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ABSTRACT:

The basidiomycete fungus *Moniliophthora perniciosa* is the etiological agent of the witches' broom disease of cacao. The disease is the most important cacao disease in Brazil, reducing productivity by up to 70%. Therefore, the objective of this work was to evaluate the inhibition of the mycelial growth of phytopathogen *Moniliophthora perniciosa* by means of volatile compounds produced by isolates of the genus *Burkholderia* sp. The experiment was carried out in a randomized complete block with five replicates in a 3x16 factorial scheme in three culture media, Nutrient Agar (NA), Luria-Bertani Agar (LB) and Malt Extract Agar (MEA) and 16 bacterial isolates. An aliquot of the cell suspension was spread onto the Petri dish containing the above mentioned media. Mycelial disks (5mm) were removed and transferred to potato dextrose agar (BDA). Then the bottom of the Petri dish containing the fungus was sealed with the bottom of the plate with the bacterial isolates and incubated at 28 °C. In the control treatment the fungus was incubated in the absence of the bacterium. The colony diameter of the fungal isolate was measured every 24 h for 8 days. Statistical analysis of inhibition of mycelial growth (IMG) was performed in Program R. Data were submitted to analysis of variance and means were compared using the Tukey test at 5% probability. All bacterial isolates produced volatile organic compounds (VOCs) capable of significantly inhibiting the mycelial growth of *Moniliophthora perniciosa* in all culture media analyzed when compared to the control treatment. The VOCs produced by the bacterial isolates in the MEA and LB culture medium had significantly higher IMG values when compared to those obtained with the NA culture media. Therefore, the VOCs produced by the *Burkholderia* sp. in the culture media MEA and LB were more efficient in inhibiting the mycelial growth of *Moniliophthora perniciosa*.

Keywords: antimicrobial, cocoa disease, fungi, inhibition, malt extract agar

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