Title: ENZYMATIC CHARACTERIZATION AND AUXIN PRODUCTION BY BACTERIA OF THE GENUS *Burkholderia* ASSOCIATED WITH FORAGE GRASSES.

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Abstract:

The promotion of plant growth by associative microorganisms has a positive impact in providing agricultural crops, in Brazil and in the world. Among the wide promoter bacterial diversity of plant growth, the genus Burkholderia are highlighted, showing features of interest such as the production of extracellular enzymes and phytohormonio, among others. In this context, the aim of this study was to evaluate the production of enzymes and índole acetic acid (IAA) by bacteria of the genus Burkholderia. Three strains of Burkholderia spp. (UAGB199, UAGB230 and UAGB238), isolated from the root endophyte niche of Brachiaria decumbens Starf were analyzed. For the analysis of auxin production, the bacteria were grown in liquid medium, containing 5mM L-tryptophan. Bacterial growth was accompanied by optical density (spectrophotometer, 600 nm), and the production of IAA by colorimetric method (spectrophotometer, 530 nm). Both analyzes were performed 24, 48 and 72 h after inoculation. The experiment was performed in triplicate for the analysis of aminolytic activity, the bacterial culture was on solid medium plus starch, at 28° C for 72 h, and stained with iodine solution. For the analysis of lipolytic activity, the bacterial culture was held in middle of lipase/esterase added Tween 20, at 28° C for 168 h. For the analysis of proteolytic activity, the bacterial culture was on medium of protease, at 28° C for 168 h. The enzymatic index was estimated in relation to the diameter of the halo of bacterial colony and the hydrolysis halo. Average comparisons were carried out in the statistical programme Sisvar 5.3, using the Tukey test at 5% probabity. Optical density and IAA production going proved to be constant, there was no statistical difference between the times assessed for the three bacteria. In enzyme production, the three strains were negative for amilolítica activity. In relation to lipolytic activity, the three strains showed lipolytic activity hydrolysis with the enzymatic index ranging from 2.86 to 4.96, with emphasis on the UAGB199 strain. For proteolytic activity, UAGB199 and UAGB230 strains were positive with with the enzymatic index ranging from 1.63 to 6.53, with emphasis on the UAGB230 strain. The three bacterial strains were positive for the features of indole acetic acid production and amilolítica activity. Future tests are needed of phenotypic characterization and inoculation.

Keywords: indole acetic acid, enzyme activity, plant growth promotion.

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