

TITLE: GENETIC AND PHYSIOLOGICAL DIVERSITY OF *BURKHOLDERIA* SPP. ISOLATED FROM DIFFERENT HOSTS

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ABSTRACT:

The bacterial diversity associated to sugarcane have shown that the *Burkholderia* species, a Gram-negative bacterial, is a dominant group in the rhizosphere and in the inner plant tissues presenting an important role in plant growth. This genus belongs to β -proteobacteria class and include more than sixty species, which have been found in several ecological environments, such as soil, rhizosphere, water and in association with animals and plants. Some species are associated to diseases in plants or immunocompromised individuals and patients with cystic fibrosis, as well as are effective in biotechnological applications. Due these plasticity members of this genus have been widely used in processes such as biological control of plant disease, bioremediation and production of important molecules of medical, agricultural and industrial interest or as plant growth promoter. *Burkholderia seminalis* TC3.4.2R3 was isolated as an endophyte from sugarcane root, and further studies demonstrated that this strain can control fungi and pathogenic bacteria, by the synthesis of antibiotics. Therefore, in the present study, we evaluated twenty isolates of *Burkholderia* spp. obtained from different microbial collections. The genetic diversity of these strains, was performed through MLSA with up to 4 genes followed by phylogenetic tree construction. The evaluation of the physiological diversity of these strains was carried out by antagonistic tests, demonstrating that several *Burkholderia* isolates can inhibit fungi and pathogenic bacteria, suggesting that these isolates produce many antimicrobial compounds, which could be a source of new molecules used in the pathogen control in field conditions. The molecular regulation of this ability has been evaluated to understand the mechanism related to this microbial inhibition.

Key words: *Burkholderia* spp., antagonism, genetic diversity, biotechnological application

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