

PS.27.003 ACIDOBACTERIA ISOLATES FROM THE BRAZILIAN CERRADO

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The Cerrado is a savanna-like environment that comprises approximately 22% of central Brazil.

As revealed by 16S rRNA gene clone libraries, the phylum Acidobacteria is dominant in these soils. Acidobacteria is present in most 16S rRNA libraries derived from different soils sources; in the Cerrado this predominance is above 50% in all soils tested. The goal of this work was to isolate Acidobacteria members in order to study its physiology and investigate their role in Cerrado soils.

Soil samples were obtained from an area located 130 km south of Brasilia. Three samples were selected, one associated with cultivation of eucalyptus and the others obtained from two distinct cerrado native vegetations. Acidobacteria specific primer amplification using metagenomic DNA revealed that all samples harbored acidobacteria. Soil was collected from the upper 5 cm and 1 g was suspended in 50 mL of VL55 medium salt solution. Samples of 300 µl were spread on VL55 solid medium containing xylan as the sole carbon source and incubated at 23°C for 8 weeks. The number of colonies was scored weekly. Acidobacteria was detected by colony-PCR using group specific 16S primers. Colonies that yield positive amplification, as well as randomly selected colonies, were sequenced for 16S rRNA gene phylogenetic analysis. An average of 100 colonies per plate was observed after 3 weeks of incubation. Although the highest bacteria count was obtained from the eucalyptus soil, these samples yield no acidobacteria. All the confirmed acidobacteria isolates were from native soils and belonged to GP1 presenting similarity between 90 and 97 % with known species. The majority of the non-acidobacteria colonies were related to Proteobacteria. This study indicates the presence of new species of Acidobacteria that were for the first time cultivated from the Cerrado biome. The characterization of these bacteria will provide crucial information on their role in the nutrient cycling in the Brazilian Cerrado soils.

Abstract Category

27 Novel organisms and Novel Functions