

TITLE: TAXONOMIC AND FUNCTIONAL CHARACTERIZATION OF THE LIGNOLITICAL POTENTIAL OF MICROORGANISMS ISOLATED FROM THE SOIL AND WATER OF CAATINGA BIOME

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ABSTRACT:

Although the Brazilian energy matrix is diversified, the world economy still prioritizes the use of fossil fuels, such as oil and mineral coal. Thereby, the development of biofuels represents a viable alternative to the current scenario. Pretreatment of lignocellulosic biomass for energy production represents a bottleneck for the bioenergy industry. Therefore, this study had the objective to prospect bacterium, isolated from the Caatinga biome, with lignocellulosic activity for biotechnological application in the pretreatment of bioethanol production. The collection and isolation was carried out in the Chapada Diamantina region. The microorganisms were characterized in terms of their growth capacity in lignin-containing medium as the only carbon source and taxonomically identified by analysis of the 16S rRNA gene. In addition, phenotypic characterization was performed in solid and liquid medium to evaluate the lignolytic potential of the isolates. It was obtained 21 isolates associated with the genus *Klebsiella*. The highest rates of degradation were carried out by lineage FP10-5.22 in medium containing the methylene blue dye after 24h. A reduction of 87% was observed between the final absorbance of the control and the final absorbance of the lineage. The collection of microbial isolates, acquired in this work, represents an important way to promote the development of knowledge about the biodiversity of the Caatinga biome with potential biotechnological application for the production of biofuels.

Keywords: lignin, lignocellulosic biomass, biofuels, caatinga biome

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