

**TITLE:** CAATINGA'S ACTINOBACTERIA AND ITS ABILITY TO PRODUCE DYPS AND MNP

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## **ABSTRACT**

Actinobacteria are Gram-positive bacteria, with characteristics similar to filamentous fungi, slow growth and presence of hyphae. It is known for the capacity to produce secondary metabolites and the ability to oxidize phenols and steroids, also can be found in soil, mud, marine sediments, composting processes and extreme environments, such as Caatinga. Enzymes are extremely important tools in industrial nowadays, specially DyPs (Descolorizing Dye Peroxidases) and Manganese Peroxidase (MnP) for its potential in environmental applications, mainly based on lignin's biodegradation, dye discoloration and compatibility with detergents. In this context, these microorganisms are being analyzed as a source for enzymes that are able to work in different scenarios of temperature and pH. In this sense, 173 actinobacterias were isolated from Caatinga rhizosphere and evaluated as a biological source of DyPs and MnP, using Rblue19 (Remazol Brilliant Blue R), phenol red as substrate and MnP using manganese as cofactor, respectively. For DyPs, the isolates AC01, 13, 127, 140, 171 173 showed activity between 500 and 800 UL<sup>-1</sup>, which is compatible to that described in the reference literature. Whereas for MnP, actinobacteria AC13, 17, 35, 79, 81, 92, 99, 109,139, 148, 155 e 160 displayed activity using phenol red as substrate, and AC14 and 173 showed approximately 12 UL<sup>-1</sup> of activity when MnSO<sub>4</sub> was used to oxidize Mn<sup>+2</sup> to Mn<sup>+3</sup>, since it also oxidizes a variety of monomeric phenols, including dyes as well as phenolic lignin model compounds. Thus, isolates AC171 and 173 were selected for enzymatic degradation analyzes directly in sugarcane bagasse, in order to increase the yield of second generation bioethanol production.

**Keywords:** Actinomycetes, Caatinga, bioethanol, lignocellulolytic enzymes.

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