TITLE: ENDOXYLANASE AND ENDOGLUCANASE PRODUCTION BY ACTINOBACTERIA ISOLATED FROM BRAZILIAN CERRADO SOIL

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ABSTRACT:
In general, the soil is a of the most diverse and heterogeneous habitats for Bacteria and Archaea in the planet. Actinobacteria are Gram positive filamentous bacteria widely cited in the literature as producers of important industrial enzymes involved in lignocellulose degradation. The enzymes involved in the degradation of lignocellulose, such as xylanases and cellulases may have applications in biotechnology and their products may be converted subsequently into liquid fuels, single cell protein, solvents and other chemicals by the selective use of specific fermentative microorganisms. The aim of the present work was to investigate endoglucanase and endoxylanase production by actinobacterias isolated from a Brazilian cerrado soil. The species were grown in pure substrates in submerged fermentation (SmF) and analyzed to produce enzymes endoglucanase, β-glucosidase, endoxylanase and β-xylosidase, using CMC and beechwood xylan as the carbon sources. The best results were obtained in endoxylanase enzyme production, the peak of enzyme activity occurred on the fourth day of culture and then started to decline. Endoglucanase activity was detected for nine of the 11 evaluated species. In all cases, enzyme production started after the fourth day of culture and peaked at day seven. Under the experimental conditions, β- glucosidase activity was not detected in any of the 11species evaluated. All the evaluated species produced β-xylosidase, and in seven species, the peak of enzyme activity was observed on the second day of cultivation. The Cerrado soils presented an abundant number of actionbacteria isolates with biotechnological potential to produce cellulolytic and xylanolitic enzymes, with possible applications in industrial processes, especially those related to the production of ethanol, using lignocellulolytic substrates.

Keywords: actinobacteria**,** brazilian soils, enzymes, cellulase, xylanase

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