TITLE: ENZYMATIC CHARACTERIZATION OF Streptomyces sp. ISOLATED FROM THE SILAGE OF *Sorghum* sp.

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ABSTRACT:

Streptomyces sp. it is a genus of Gram-positive filamentous bacteria that exhibits high content of Guanine and Cytosine (G + C) in its genetic material, belong to the phylum Actinobacteria, and has been extensively studied due to its ability to produce various compounds to pharmaceutical and industrial applications, including antibiotics and enzymes such as catalase, esterase, proteases, amylase and pectinase which are biological catalysts of high importance in biotechnological processes. Thus, this study aimed to characterize the potential production of enzymes of biotechnological interest by the strain of *Streptomyces* sp. Sil 16A isolated from *Sorghum* sp. Qualitative tests for catalase, gelatinase and semi-quantitative assays for the production of the amylase enzymes, pectinase, caseinase, lipase, esterase and hemolysin were carried out in solid media using various inductive substrates. To evaluate the production of catalase, the lineage was previously cultured for 7 days at 30°C, and subsequently developed with hydrogen peroxide (H2O2). Gelatin degradation was evaluated in culture medium containing 12% gelatin after incubation for 7 days at 30°C, followed by 1h at 4°C under refrigeration. Production of amylase and pectinase was observed in Agar-Starch medium for 10 days at 30°C and TSA medium with citrus pectin for 10 days, respectively, followed by development with iodine solution. Caseinase production was analyzed after culturing in medium containing milk powder at 30°C for 7 days. Lipase and esterase were evaluated from the inoculation of strains in the Sierra medium containing Tween 80 and Tween 20, respectively, for 10 days at 30°C. Hemolysin production was assessed from the formation of hemolysis on Blood Agar after incubation of the strain for 7 days at 30°C. The enzymatic potential was determined by the enzymatic index (EI) by the ratio of the diameter of the halo hydrolysis (mm) To the diameter of the colony (mm). The actinobacterium *Streptomyces* sp. Sil 16A produced the enzymes catalase, gelatinase and esterase (EI = 7.41), followed by pectinase (EI = 3.05), lipase (EI = 2.85), caseinase (EI = 2.72) and hemolysin (EI = 1.81), thus evidencing the high Metabolic versatility that this lineage presents to extracellular enzymes that in the future can be used in the food, pharmaceutical and biotechnology industry.

Keywords: Actinobacteria, enzimatic activity, Biotechnology, *Streptomyces*.