

TITLE: ANALYSIS OF XILANASE PRODUCTION BY STREPTOMYCES SP. USING THE SEMI-SOLID FERMENTATION (FSS).

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ABSTRACT:

Solid-state or semi solid fermentation (FSS), which holds growth of microorganisms on moist solid substrates in the default of free flowing water, has gained considerable attention of late due its several advantages over submerged fermentation. The search for different microorganisms that operate in these types of conditions in the production of enzymes, such as Xylanases that have applications in several industrial fields, has aroused great interest from the biotechnological point of view. The aim of this work was to study the production of xylanase enzymes produced by a strain of *Streptomyces sp.* isolate of dry sugarcane bagasse from industries in the state of Goiás, cultivated by semi-solid fermentation technique in MM (minimum medium) containing FT (wheat bran) as carbon source. The assay was run in duplicate for 24, 48, 72 and 96 hours at 37 ° C. The culture supernatants with a better Xylanase enzyme performance were analyzed for pH and temperature, where the 96 hour culture extract demonstrated the Activity of the respective enzyme. Quantification of the liberated reducing sugar content was conducted by the ADNS method and the substrate used was "beetchwood" xylan. One unit of enzymatic activity (U) was defined as the one that releases one μmol of the corresponding reducing sugar per minute under the conditions of the experiment. Enzymatic activity assays were performed in triplicate on microassay plates. The results showed that the highest Xylanase activity was at pH 8.0 (6.04 U / mL), with pH 5.0 (5.44 U / mL) and at 35 ° C (3.18 U / ML), with peaks at 55 ° C (1.89 U / mL) and 70 ° C (2.25 U / mL). The protein profile analyzed by SDS-PAGE demonstrated a set of bands with molecular mass between 30 and 70 KDa, where the secreted xylanases visualized in the zymogram showed that the microorganism secreted a set of xylanases with molecular mass of nearly 70, 60, 45, And 38 KDa. The results show that the Xylanases produced by this microorganism in semi-solid fermentation have the potential to be used in biotechnological processes.

Keywords: solid-sate fermentation, streptomyces, xylanase, hemicellulases