TITLE: BIOCHEMICAL CHARACTERIZATION OF AMILASES PRODUCED BY *Aspergillus niger* USING SWEET POTATO PEEL AS SUBSTRATE

AUTHORS: MARMENTINI, J.; GROFF, D. B.; MARTINS, M. D.; KNOB, A.

INSTITUTION: UNIVERSIDADE ESTADUAL DO CENTRO-OESTE - UNICENTRO, GUARAPUAVA, PR (RUA SIMEÃO CAMARGO VARELA DE SÁ, 03 - VILA CARLI, CEP 85040-080, FONE: (42) 3629-8100, GUARAPUAVA - PR)

ABSTRACT: Amylases are an important class of enzymes having great prospects in industrial biotechnology, including their use in the pharmaceutical, textile, detergent and food industries. They are enzymes capable of hydrolyzing the α-1,4 and α-1,6 glycosidic bonds of the starch, resulting in various products, including dextrins and progressively small polymers composed of glucose units. The biochemical characterization of crude enzyme is essential, in order to determine its feasibility for a particular application. Thus, this work aimed to determine the physico-chemical properties of the amylases produced by an *Aspergillus niger* strain, isolated from Araucaria Forest soil. Cultures were performed in liquid Vogel medium containing 1.5% sweet potato peel as the carbon source at 30 ºC, pH 6.5, for six days. The amylase activity was determined by the quantification of reducing sugars, by using the reagent 3,5-dinitrosalicylic acid (DNS). The optimal temperature of the amylases was evaluated by determining the activity at temperatures between 30 ° C and 55 ° C, with intervals of 5 ° C. The optimum pH of the *A. niger* amylases was inferred by quantifying the relative activity at different pH values (4.5 to 6.5). To assay thermal stability, the crude filtrate was incubated at 45 ºC, at the optimal pH determined previously, for different periods, in the absence of substrate. The residual activity was determined under optimal conditions stablished previsioly. The amylases produced by *A. niger* were more active at 45 ºC and pH 5.5. In addition, these enzymes were shown be stable at 45 °C. It is noteworthy that at 45 °C, the half-life ($T_{1/2}$) of *A. niger* amylases exceeded 1440 min. These results open new possibilities for applied *A. niger* in some industrial processes, such as food industries.

KEYWORDS: physical-chemical characterization, stability, amylases, filamentous fungi

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