

Title: ASPERGILLUS OF NIGER GROUP AND STREPTOMYCES SP. AS PROTEASES SOURCES

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Abstract:

Proteases are multifunctional enzymes and represent a fundamental group due their diversity of biological function and biotechnology. They show important applications in medicinal, pharmaceutical, food and cleaning industries. Micro-organisms are known producers of enzymes and among them fungi and actinomycetes can be potential sources of proteases. Besides, these micro-organisms are abundant in distribution and biochemistry diversity, have susceptibility at genetic manipulation and usually produce extracellular enzymes which are easily recovered on fermentation medium. The aim of this study was to evaluate the extracellular proteases production by filamentous fungi and actinomycetes. Ten strains from DPUA/UFAM culture collection were selected: five *Aspergillus* of niger group and five Actinomycetes which are known as filamentous bacteria. The cultures were cultivated in Petri dishes containing Sabouraud agar (fungi) or ISP2A agar (Actinomycetes) and maintained at 25 °C for 7 days. The submerged fermentation of the strains was carried out in Erlenmeyer flasks (125mL) containing 50mL of Sabouraud dextrose broth supplemented with gelatin 0,5% (p/v) (filamentous fungi) or ISP2 (filamentous bacteria). Five mycelial discs (6mm diameter) of the cultures were inoculated in each flask and maintained in orbital shaker (180rpm) at 30 °C for 72 hours. The mycelial biomass was separated from the crude extract by vacuum filtration. The proteolytic activity was determinate using 1% (w/v) azocasein as substrate. The results demonstrated that 100% of the fungi and actinomycetes produced proteases. However, *Aspergillus japonicus* DPUA 542 and *Streptomyces* sp. DPUA 1570 expressed the highest proteolytic activities (1.33 and 3.30 U/mL, respectively). At the end of fermentation the *Aspergillus* crude extracts pH varied from 1.0 to 2.0 and from 4.0 to 7.0 in the Actinomycetes crude extracts. According to the experimental conditions, the actinomycetes presented higher proteolytic activities when compared to the filamentous fungi. Therefore, these filamentous bacteria can be good sources of proteolytic enzymes with industrial importance.

Keywords: Fungi; Actinomycetes; Proteolytic activity; Biotechnological potential.

Development Agency: CNPq; UFAM; FAPEAM