

Title: Proteolytic antimicrobial potential of *Aspergillus* and *Streptomyces* sp. from Culture Collection DPUA

Authors: Ferreira, J.A. S.¹, Souza, B.C.², Prado, F.B.¹, Silva, L. P.¹, Vinhote-Marinho, N.M.¹, Teixeira, M.F.S¹

Institution¹ Universidade Federal do Amazonas - UFAM (Av. General Rodrigo Octávio, 6200, Coroado I, Cep: 69077-000), ² Universidade do Norte - UNINORTE - Unidade 6, Av. Joaquim Nabuco – Nº 1469, Bairro: Centro.

Abstract:

Micro-organisms are important sources of substances with biological activity as proteases and antibiotics which have applications in pharmaceutical, chemical and food areas. *Streptomyces* and *Aspergillus* can be great antimicrobial producers due they be considered as GRAS (Generally Regarded as Safe). In this context, this study aimed to investigate the proteolytic and antifungal activity in solid medium to select a micro-organism source of industrial biocompounds. Ten strains were selected: five filamentous fungi from *Aspergillus* of niger group and five Actinomycetes which are known as filamentous bacteria. The fungi were cultivated in Sabouraud agar and the bacteria in ISP2A agar during 7 days at 25C. To determinate the qualitative activity of proteases, three mycelial discs (6 mm) were transferred to the surface of 5% (w/v) Milk agar in Petri dishes. The in vitro antifungal activity was determined by agar plate method using cells suspensions of *Candida albicans* and *Trichosporon pullulans* according to 0.5 McFarland scale. Three mycelial discs (6 mm) were transferred to the surface of Sabouraud agar containing the micro-organisms test. The cultures of both tests were maintained at 30C for 48 hours with observation every 24 hours. The proteolytic and antifungal activities were determined, in mm, according to the formation of a clear zone around the discs. The results showed that 40% of the Actinomycetes and 10% of the *Aspergillus* expressed proteolytic activity with zone of inhibition ranging from 12 to 16 mm. In the antifungal activity, all the filamentous bacteria inhibited *T. pullulans* and *Candida albicans* was resistant to all filamentous fungi. According to the screening made, *Aspergillus niger* has potential as protease producer and *Streptomyces* can be considered a promising source of antimicrobial compounds and proteolytic enzymes.

Keywords: Filamentous fungi and bacteria; Proteolytic activity; Antifungal activity.

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