

Bioprospection in Filamentous Fungi: Study of Enzymes Produced by Filamentous Fungi Aiming Biotechnological Applications

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Amylases correspond to 30% of world production of enzymes. This catalyzer group involves since the degradation of macromolecules of starch until fructose production, offering a wide industrial applicability. In order to find fungi with high potential for amylases production was performed a process of bioprospection, from soil samples and decomposing materials, both collected in São Carlos, São Paulo. Among the fungi collected, a strain of the genus *Monascus* was selected to continue the experiments due the good enzymatic production. The fungi of this genus are widely used in Asia as amylase producers, food industry pigments and medicines, such as the citrinin, a powerful antibiotic and nephrotoxic molecule and the mevinolin, an anti-cholesterolemic compound. In this work *Monascus* sp was cultivated in six culture media as Khanna, modified Khanna, Czapeck, Vogel, CP, SR and Adams supplemented with 1% starch, as carbon source. The highest amylolytic levels were verified with CP medium. Time-course of amylase production was carried out by 10 days, but the best results were obtained with 8 days of cultivation when the fungus was maintained in static conditions, at 30°C. Maximum growth (determined by mg protein) was verified in the 7 day. In this period the amylase was predominantly extracellular (95%) Dialysis of extracellular amylase increased the activity in 6%. When the amylase was assayed with starch the unique end-product revealed by Thin layer Chromatography was glucose, suggesting the presence of a glucoamylase (1,4 α -D-glucan glucohydrolase). The fungus showed a biotechnology application, with great industrial potential.

Keywords: Bioprospection, amylase, biotechnology, *Monascus* sp.

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