

Analysis of cellulases production by filamentous fungi collected and isolated in the North of Minas Gerais

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The immense potential degradation of organic materials by micro-organisms and the great diversity of enzymes produced by themselves, has been explored over the years, nevertheless the good prospect for fungi producing enzymes of industrial interest is little explored. Lignocellulosic biomass is an abundant source of carbon consisting of three major components: cellulose, hemicellulose and lignin. Cellulases are a complex of enzymes found in secretions of microorganisms, this enzymatic complex can hydrolyze cellulose until it reaches small oligosaccharides and glucose molecules. Thus, this study aimed to analyze Filter-paperase (FPase) production of four distinct micro-organisms isolated in the North of Minas Gerais for future biotechnological application. From the straw sugarcane were isolated four different filamentous fungi (T1, T2, T3 and T4), which had distinct macroscopic morphological characteristics as color, texture and background. Analyses was performed of the microculture of fungi and it was found that the fungus is of the genus *Neurospora* (T1), *Mucor* (T2), and *Aspergillus* (T3, T4). The celulolitic levels were obtained when the fungus was grown at 30°C and 35°C, in modified Khanna medium, initial pH 5.0, during five days, under standing conditions. The enzymatic assays were carried out with filter paper as substrates. The reducing sugars released were quantified using acid 3', 5' dinitrosalicilic acid. It was observed that T1 fungus has pink color, smooth bottom and algodonsa texture, T2 and T4 has white color with black spores, smoth bottom and algodonsa texture, whereas the T4 microorganism has black color, smooth velvety texture and fungus. After cultivation of the fungi at 30°C, it was observed that the FPase enzyme of the T3 was the 6.2 U/ml, followed by the fungus T1 with 3.4 U/ml, while T3 and T4 did not produce the enzyme. However, when the fungus was grown at 35°C, was observed 52% decrease in the enzyme activity by all fungi, however, when fungi were inoculated at 40°C was visualized growth of microorganisms, but not observed enzymatic activity. The activities of FPase of the T3 and T4 fungi at 30°C are significant when analyzed and compared to the literature, particularly when it seeks a future application for generating ethanol from sugarcane bagasse.

Palavras-chaves: bioprospection, filamentosuos fungi, cellulases

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