

ISOLATION AND PROTEOLYTIC POTENTIAL OF AIRBORNE FUNGI

Autores: Souza, B.C¹ Silva, L.S.C², Teixeira, M.F.S² Silva, T.A²

Instituição Uninorte¹ (Centro Universitário do Norte, Av. Joaquim Nabuco 1232-Centro, Manaus-AM)
UFAM² (Universidade Federal do Amazonas, Av. General Rodrigo Octavio 6200-Coroado1, Manaus-AM).

Proteases are versatile enzymes that can be used in food industry processes as beer clarification, softening meat and baking. For that reason, the screening of new proteases sources is interesting in the biotechnological market. The aim of this study was to isolate and select airborne fungi and determinate their proteolytic activity. The fungi were isolated by sedimentation of spores on Sabouraud agar surface. They were identified based on macroscopic and micromorphological characteristics at genus level by colonies cultivation in CYA agar (Czapek Dox and yeast extract) at 25 C, for 7 days. From the cultures identified, eight of them were selected belonging to *Aspergillus* and *Penicillium* genus. They were cultivated in MGYD (w/v) (0.3% malt, 1.0% glucose, 0.3% yeast extract and 0.5% peptone) using a spore suspension (10^6 spores/mL) as inoculum. The submerged fermentation was carried out at 25C and 150 rpm, for 96 hours. The crude extract was separated from the biomass by vacuum filtration and the proteolytic activity was determined using 1% (w/v) azocasein as substrate. The reading of the samples was made at 440 nm and a unit of activity was defined as the variation of absorbance equals to 0.01 in one hour, expressed in U/mL. Five different fungi genres were identified: *Aspergillus*, *Penicillium*, *Cladosporium*, *Paecilomyces* and *Candida* with predomination of the first two genres. *Micellia sterilia* was also detected but is known as a group of fungi that does not sporulate. All the selected airborne fungi produced proteases with an average activity of 14.79 U/mL. The best results were obtained by ISO-L3 *Aspergillus* (26.2 U/ml) and ISO-L9 *Penicillium* (25.3 U / ml). The data demonstrated that the occurrence of atmospheric air fungi in residential environment has potential as enzymes producers of industrial importance.

Keys-word: enzymes, filamentous fungus, airborne fungi