

TITLE: CELLULASE AND AMYLASE ACTIVITY OF FUNGI ISOLATED FROM AN ABANDONED SAWMILL.

AUTHORS: MORAES, T. S. J.; ANTUNES, L. A.; VILELA, L. F.; CUNHA, J. R. B.; TAVARES, D. G.; CASTRO, C. P.; SOUZA, J. R.; DIAS, E. S.

INSTITUTION: UNIVERSITY OF LAVRAS, DBI (University campus, zip code 3037, CEP 37200-000, LAVRAS/MG)

ABSTRACT: Cellulases convert cellulose, which is a complex polysaccharide, into simple sugars such as glucose, by breaking the beta1-4 glycosidic bonds, hydrolyzing cellulosic materials, with wide use in the textile, paper and cellulose industries. There is also a great interest from the industry due to the possibility of its conversion into ethanol. Another enzyme of industrial interest is amylase, which acts on the break of the glycosidic bonds, present in the amylopectin chains, with potential application in the food, pharmaceutical and chemical sectors, being classified in several forms, depending on its hydrolysis capacity of the starch, main reserve polysaccharide of plants. Many fungi can degrade various types of organic materials. For this purpose, the several metabolites excretion is required, and many enzymes are among those essential for the colonization of plant components, such as cellulase and amylase. Therefore, it is important to study the enzymatic properties to evaluate their potential use in the most diverse biotechnological processes. The study aim was to evaluate, by qualitative tests, the cellulase and amylase activity from 12 fungi isolated from wood fragments collected in an abandoned sawmill in Bagre, belonging to the Marajó region, in the Pará state. The evaluation of cellulase activity was done by inoculating in basic medium, added yeast extract and carboxymethylcellulose, a 10 mm disc containing the mycelium of the fungus, in the center of the plate. To evaluate the amylase activity, starch agar was used, following the same procedure. Incubation was done at 25 ° C for 7 days. After this time, a lugol solution was used to cover the entire plate. The formation of an opaque yellow zone indicated the cellulase and amylase production. The isolates showed variation in the enzymes activity, and among the 12 isolates, 7 presented cellulase production and 3 showed amylase production. Two isolates showed both enzymes activity, demonstrating versatility in the enzymatic production. The enzymatic activity quantification of the fungi that showed positive results in the qualitative tests should be evaluated in order to verify the potential of these microorganisms as enzyme producers. Molecular analyzes will be performed later to identify these isolates.

Keywords: cellulase, amylase, enzymatic analysis, wood residues.

Development Agency: CAPES; CNPQ; FAPEMIG.