

TITLE: OPTIMIZATION OF pH FOR CELLULASE PRODUCTION WITH AGROINDUSTRIAL WASTEWATER

AUTHORS: STATI, V.F.; MARTINS, B.L.; BOVI, L.A.; CABESTRÉ, R.; QUEIROZ-FERNANDES, G.M.

INSTITUTION: UNIVERSIDADE DO SAGRADO CORAÇÃO- PRÓ-REITORIA DE PESQUISA E PÓS-GRADUAÇÃO (PRPPG), PROGRAMA DE MESTRADO EM CIÊNCIA E TECNOLOGIA AMBIENTAL (RUA IRMÃ ARMINDA- 1050-JARDIM BRASIL- 17011-160-BAURU-SP).

ABSTRACT:

The reutilization of agroindustrial wastewater in biotechnological processes can be an alternative to avoid the incorrect discard these residues in the environment. A large quantity of wastewater with many chemical products is generated in pulp industry, especially, in the whitening process, becoming indispensable the previous treatment before discard. Fungal cellulases are enzymes highly specific, able to act in cellulosic complex, inducing their hydrolysis. The cellulases can be used in different industrial sectors, substituting chemical catalyzers, reducing environmental damages due to their properties, such as, biodegradability. However, the cost to obtain the enzyme is high. Therefore, this study researched to improve the conditions of pH to obtain fungal cellulase, using agroindustrial wastewater donated by a pulp industry. It was used two wastes obtained from the whitening process of cellulose, with acid and alkaline characteristics to induce the production of cellulase, in culture medium previously described in literature. The production was realized in submerged liquid fermentation with fungus *Aspergillus niger* (IOC/CCFF 3998). It was analyzed the following pH: 5.0; 6.0; 7.0; 8.0; 9.0 and 10.0. The production was realized in a period of 7 days, in orbital shaker with controlled temperature (30°C) and 100 rpm. The tests were realized in triplicate and the results statistically analyzed and showed that the fungus produced the cellulase with higher activity in pH 8.0 for both wastewater. These data corroborate results presents in literature and were important to desenvolve the others steps of optimal conditions to produce cellulase using these agroindustrials wastewater. We believe that researches in this area can contribute to development of tenable biotechnological process.

Keywords: *Aspergillus niger*, enzymes, submerged liquid fermentation, reuse of residues.