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Effect of Initial Moisture Content on two Amazon Rainforest *Aspergillus* Strains Cultivated on Agroindustrial Residues: Biomass-Degrading enzymes Production and Characterization

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Biomass-degrading enzymes production using low cost and easily available agricultural residues as substrates of solid state fermentation (SSF) can contribute to a broader application of enzymes in the conversion process of biomass into biofuels. Among the operational parameters that affect the SSF process efficiency, moisture content is one of the most important. This work evaluates the initial moisture content effect on two *Aspergillus* strains isolated from the Amazon Rainforest growing under SSF by analyzing the biomass-degrading enzymes produced using different agro-industrial residues as carbon sources (wheat bran, sugar cane bagasse, soybean bran, and orange peel) and characterizing the enzymatic complex produced by a selected strain of *Aspergillus fumigatus* in terms of the optimum pH and temperature and thermal stability. Among the lignocellulosic materials evaluated as carbon source for *Aspergillus* cultivation, wheat and soybean bran as well as the mixture of sugar cane bagasse and wheat bran (1:1) were the most effective for multienzyme production. Nevertheless, much higher values for β-glucosidase and xylanase were achieved when using wheat bran as substrate. The characterization of the crude enzyme has shown *A. fumigatus* P40M2 enzymes to be active in the acidic pH range 3 to 5, with maximal activity at either pH 3.0 or 65 °C, hence a promising organism for the production of acidophilic and thermophilic enzymes.

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