OPTIMIZATION OF THE PRODUCTION OF Mn-PEROXIDASE BY *Lentinus crinitus*.


Lignocellulolytic basidiomycets grow on decaying wood and vegetable waste secreting a variety of natural products, including flavors, and also present an enzymatic system capable of degrading cellulose, hemicellulose and lignin which has enabled Intense research aiming at potential commercial applications of these fungi. Sugarcane bagasse and coconut shells are examples of agroindustrial wastes that impact the environment and can become sources of energy and new materials. The objective of this study was to optimize the conditions for the production of manganese peroxidase by *Lentinus crinitus*, a basidiomycete of the Polyporaceae family, using agroindustrial residues as substrate. For the optimization of culture conditions and enzyme production, a multivariate experimental design generated by the software Statistica (7.0) was applied, testing as substrate sugarcane bagasse and coconut shell, initial pH (3.0 to 11), and temperature of incubation (10-40 °C). The highest activity of this enzyme (14.02 U/L) was secreted by *L. crinitus* in medium containing sugarcane bagasse (50%) and coconut shells (50%), pH 7.0, 80% moisture, at 25 °C. Using the optimized conditions the incubation time (between 5 and 30 days) was evaluated. The maximum activity of the enzyme was obtained on the 5th day (73.34 U/L), thus leading to the conclusion that *L. crinitus* shows good potential for the production of manganese peroxidase on vegetable waste.