

**TITLE:** EXTRACELLULAR ENZYMES PRODUCED BY FUNGI ISOLATED OF RHIZOSPHERE AND RHIZOPLANE FROM *Manihot esculenta*.

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**ABSTRACT:**

Amazon region has been showed a great genetic diversity fungi that play a central role in the regulation of ecosystem processes. Use organic matter into beneficial for society is one of the main functions that microorganisms play in nature. This process has been realized mainly by fungi producing of enzymes. They can be applied in the most varied industrial sectors such as food, detergents, stationery and the degradation of agro-industrial waste. The aim of this study was to isolate fungi able to produce extracellular enzymes and evaluate the catalytic action. The crude extract of filamentous fungi was isolated from the rhizosphere and rhizopon of *Manihot esculenta*. 14 fungal colonies were obtained from the rhizosphere and rhizopon of *Manihot esculenta* from Coari city (S 04°06'54.7" W 063°02'50.5"), Amazon region. A conventional technique of successive dilution was done for isolate the organisms followed by plating ( $10^{-3}$  to  $10^{-6}$ ). The crude enzymatic extract was obtained by Submerged Fermentation in Manachini solution with inductive substrate CMC (carboximetilcelulose) and Tween 80 for each enzyme 0.5% (w / v), for 72 hours in shaker incubator at 28 °C, filtered on glass fiber membrane (47mmØ) and centrifuged at 3500 rpm for 20 min. The extract was inoculated in petri dishes containing CMC Lipase Agar for cup-plate diffusion assay, and incubated at 37 °C for 36 hour in B.O.D. greenhouse. Detection and quantitation of celulase and lipase were realized by Congo red 1% and incubated at 4 °C for celulase and lipase. The result were determined by the Enzyme Activity Index (EI), according to the literature. The experiment was performed in triplicate. Microorganisms with the result  $EI \geq 2.0$  are considered a good producer. Positive results were obtained for both enzymes. Samples CS1, CS3 and CS5 showed good results to celulase and lipase with value 3.4, 2.6, 3.6 and 4.3, 4.5, 3.2 respectively. Qualitative assay all fungi produced celulase enzyme, among them, the most expressive results were SM9, MS3 and SM2 with values 6.2, 5.7 and 5 respectively. In view of the great microbiological potential of the Amazon region and the increasing applicability of enzymes in the biotechnological area, it becomes feasible to select and identify microorganisms that produce the enzymatic complex.

**Keywords:** Microorganisms, crude enzyme extract, cellulase, lipase