

TITLE: BIOEMULSIFIER PRODUCTION BY *MUCOR CIRCINELLOIDES* UCP 0001 USING AGROINDUSTRIAL RESIDUES AS SUBSTRATES

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ABSTRACT:

Biosurfactants are molecules that present hydrophobic and hydrophilic portions and abilities to reduce surface tension and act in the dispersion, solubilization, mobilization and emulsification of liquids with two phases. Those with the specific ability to emulsify are called bioemulsifiers. They can be produced by a wide variety of microorganisms, such as bacteria, yeasts and filamentous fungi. Bioemulsifiers have vast relevance in many industries like food, agriculture, pharmaceutical and petrochemical. In this study bioemulsifier was produced by filamentous fungi *Mucor circinelloides* UCP-0001 cultivated in the agroindustrial residues sugar cane bagasse hydrolysate and corn steep liquor. The cultivation was done from a 10⁷ spores/mL inoculum in 250 mL Erlenmeyer flasks containing 100 mL of production medium, incubated at 28°C, 150 rpm and for 96h. Residue concentrations were established through 2² factorial design with Emulsification Index (EI) as response variable. The assays 1 and 2 showed promising results in bioemulsifier production, with 2% of corn steep liquor on both assays and 4% and 6% of sugar cane bagasse hydrolysate, respectively. After filtration using 120 µm silk screen, the net metabolic liquid containing the bioemulsifier was then evaluated using the Emulsifier Index (EI) that presented steady results ranging from 30% to 70% on 6 tested oils (Sunflower oil, Canola oil, Cashew oil, Soy oil, Corn oil and Burnt motor oil). *Mucor circinelloides* UCP- 0001 reveal to be a great bioemulsifier producer by the metabolic conversion of agroindustrial residues, with low cost and viability for many potential biotechnology applications.

Keywords: Mucoralean fungus. Renewable residues. Emulsifier.

Development Agencies: CNPq, CAPES and FACEPE.