

BIOTECHNOLOGICAL PRODUCTION OF BIOEMULSIFIER BY *MUCOR CIRCINELLOIDES* UCP 0001 IN MEDIUM FORMULATED BY AGROINDUSTRIALS RESIDUES

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ABSTRACT:

Bioemulsifiers are high molecular weight molecules synthesized by a wide variety of microorganisms. They are amphiphilic compounds characterized by their properties of reducing surface tension, acting on dispersion, solubilization, emulsification, and detergent. *Mucor circinelloides* is a dimorphic fungus belonging to the phylum Mucoromycota and the order Mucorales. This microorganism has been used in several studies in the production of biomolecules of industrial interest and has the ability to grow in several alternative substrates. The aim of this study was to evaluate the biotechnological potential of *M. circinelloides* in the production of biosurfactant from an alternative medium. In this study the following wastes were used: whey, corn oil and frying residual oil, and their concentrations were established according to a 2³ factorial design. Aliquots of 1mL of a spore suspension containing 10⁷ sporangiospores/mL were transferred to 12 assays proposed by factorial design. The samples were incubated in orbital shaker at 150 rpm at 28°C, pH 5.0 for 96 hours. After the cultivation, the net metabolic liquid was used to analyze its emulsifying property against two vegetable oils (soybean oil and canola oil) and a hydrocarbon (motor oil) according to the emulsification index (E₂₄). The results showed that the metabolic liquid was able to emulsify canola oil in 55% - assay 10 (4% whey, 8% corn oil and 3% residual oil) and soybean oil in 52% - assay 9 (at the same concentrations). Likewise, for the hydrocarbon (motor oil) the bioemulsifier displayed the highest emulsification. The bioemulsifier produced by *M. circinelloides* has shown to be a promising candidate for future applications in the bioremediation of sites contaminated by hydrophobic pollutants.

Keywords: biotensioactive, emulsification index, factorial design.

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