

**TITLE:** PRODUCTION OF BIOSURFACTANT BY *Mucor subtilissimus* UCP 1262 USING CORN BRAN AND CORN STEEP LIQUOR AS SUBSTRATES

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**ABSTRACT:**

The demand for microbial surfactants, known as biosurfactants, is encouraged by industries, aiming the low-cost in the productive process and the environmental sustainability. Currently, many biosurfactants are used in industrial formulations on the world market in replacement to chemical surfactants. In this context, the aim of this study was to investigate the potential of *Mucor subtilissimus* UCP 1262 for bioconversion of renewable sources obtained from food wastes as raw materials for the production of biosurfactant. Therefore, this strain was grown in plates containing Sabouraud medium during 48 h at temperature of 28°C. After this period, the spores were transferred for Sabouraud broth medium in orbital agitation of 150 rpm, during 24 h up to obtain 10<sup>7</sup> spores/mL. Then, 5% of spores suspension was transferred to Erlenmeyer flasks containing the biosurfactant production medium with different concentrations of corn steep liquor, wheat bran or corn bran as substrates. The concentration of waste soybean oil (1%) was constant in all media. Fermentations were carried out during 96 h, temperature of 28°C and rotation of 150 rpm. The occurrence of biosurfactant production was investigated by determining the surface tension, emulsification index (EI) (using waste and *in natura* vegetable oils and burned engine oil as hydrophobic substrates) and test of dispersion using burned engine oil by methodology of oil displacement area (ODA). According to the results obtained, *M. subtilissimus* showed its potential to use corn steep liquor (10%), waste soybean oil (1%) and corn bran (10%) as main sources of carbon and nitrogen, resulting in maximum reduction of the surface tension from 72 to 30.1 mN/m. In this same condition, it was detected the dispersing (ODA=64 cm<sup>2</sup>) and emulsifying (EI=96%) capacities of the biosurfactant produced using burned engine oil as hydrophobic substrate. *M. subtilissimus* demonstrated its ability to metabolize the agro-industrial wastes tested as the main raw material for the production of biosurfactant with promising potential of applications in bioremediation processes.

**Keywords:** *Mucor subtilissimus*, food wastes, surface tension, emulsification index, oil displacement area.

**Development Agencies:** CAPES-PNPD, FACEPE and CNPq.