Hydrolysis of Vegetal Oils Using Lipases from *Aspergillus japonicus*

Souza, L.T.A.; Oliveira, J.S.; Regis, W.; Santos, V.L.; Santoro, M.M.

Departamento de Bioquímica e Imunologia, Instituto de Ciências Biológicas, Universidade Federal de Minas Gerais, MG; Brasil

Lipases present remarkable importance in oils modification such as in the food, biodiesel and detergent industries. The aim of this work was to test extracellular and intracellular lipases from *Aspergillus japonicus* to hydrolyze different vegetal oils. Cells in suspension and immobilized into cubes of reticulated polyurethane foam were cultivated in mineral liquid medium Czapeck Dox supplemented with sunflower oil (1% v/v), pH 6.0, and grown by shaking at 200 rpm and 30 °C. After 5 days of incubation, the cultures were filtered through Whatman filter no. 1 and hydrolytic activities of crude extract (extracellular) and immobilized biomass (intracellular) were assayed by the hydrolysis of different oil emulsions. One unit of enzyme activity was defined as the amount of enzyme that liberates 1 µmol of free fatty acid per minute at 37°C, pH 8. Extracellular lipases showed lipolytic activity between 1.70-3.53 U/mL with maximal activity in canola oil. For intracellular lipases, maximal hydrolytic activity (57.92 and 61.72 U/g) was obtained in olive and corn oil, respectively. Both enzymes were able to hydrolyze almond, corn, olive, canola, soya, sunflower and macauba oil but with different specificities. Moreover, we have found that cell immobilization within polyurethane foam support reduced the secretion of lipases into the culture medium.

Keywords: lipases, *Aspergillus japonicus*, oils modification, immobilization

Supported by: FAPEMIG