

Title: PURIFICATION OF LIPASE PRODUCED BY *TRICHOSPORON SPOROTRICHOIDES* URM6630 USING AN AQUEOUS BIPHASIC SYSTEMS (ABS)

Authors SOUZA, O.C.¹, SOUSA, M.A.¹, FARIAS, C.M.M.¹, MACIEL, M.H.C.^{1,2}, MOREIRA, K.A.³, SOUZA-MOTTA, C.M.¹

Institution ¹ UFPE - Federal University of Pernambuco (Av. Prof. Nelson Chaves, s/n, Cidade Universitária, Recife/PE), ² University of São Paulo (Av. Prof. Lineu Prestes 580, Bl. 16, São Paulo, São Paulo/SP), ³ UFRPE - Federal Rural University of Pernambuco (Av. D Manoel Medeiros, s/n, Dois Irmãos, Recife/PE)

Abstract

To developing of an efficient enzymatic process should establish a purification strategy. Generally, the purification of lipase takes as based the techniques used in the hydrolases, however, the high cost represented by these techniques becomes a barrier to obtainment these bioproducts. The aqueous biphasic systems (ABS) can be a suitable alternative for use in the first purification step, since it removes various contaminants in a simple and economic process. The ABS exploits the ability exhibited by solutions of two polymers or a polymer and a salt to separate into two aqueous phases whenever certain minimum concentrations are exceeded. The aim of this study was to purify the lipase produced by *T. sporotrichoides* URM 6630 using ABS. For the extraction of the lipase from the fermentation medium, the parameters studied were: molar mass of polyethylene glycol (PEG), PEG concentration, phosphate concentration and pH. Systems were prepared with PEG of different molar mass (6000, 8000 and 10000 g/mol) and phosphate salts. The extraction studies were based on experimental design. For statistical analysis of the results were used three response variables: increased of the purity, partition coefficient and lipolytic recovery. The best final condition of extraction was defined as one that provided the best combination of the answers. After the experiments was made statistical analysis using the Statistica 7.0 software. The best results of purification of lipase were obtained in the top phase. Also it was observed that although the recovery of the enzyme in some tests have been greater than 100%, under the conditions used was not obtained a good purification. All studied factors influenced in the purification of the lipase of form positively, ie the greater the molar mass of PEG, PEG concentration, phosphate concentration and pH, greater the purity and the recovery of lipase extracted from the fermentation medium. The best conditions for purification of lipase by *T. sporotrichoides* URM 6630 were: molar mass of PEG 10000 g/mol; PEG concentration of 24%, phosphate concentration of 20% and pH 8.0, with an increase of purity and recovery lipolytic of 0.963 and 164.7%, respectively.

Keywords: Aqueous biphasic systems, PEG, Phosphate, Lipase, *Trichosporon* sp.

Funding Agency: CAPES