

Póster 40

Production of glycerin using porcine pancreatic lipase immobilized in coconut pulp support (*A. aculeata*) as biocatalyst

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Glycerin is a polyalcohol that is non-toxic, non-irritant, and environmentally stable at room temperature. It is widely used in chemical industries, food, textiles, pharmaceuticals, among others. Obtained mainly by chemical synthesis as a byproduct of biodiesel production, crude glycerin contains high levels of impurities such as methanol, oil residues, alkyl esters, water, and low concentration of pure glycerol. The object of this study was to obtain glycerin through the biotransformation of vegetable oils and methanol using porcine pancreatic lipase (PPL) immobilized in dry powder of coconut pulp (*Acrocomia aculeata*) as support. Enzymatic transesterification was performed using the dry coconut pulp treated with tert-butanol and iso-butyl alcohol (1) to support the PPL (2). Coconut and sunflower oil substrates were used with methanol in the presence of tert-butanol as a cosolvent. Different methanol:oil ratios with a constant quantity of PPL were evaluated under mild temperature conditions until the ratio which produces the highest quantity of glycerin was found. The quality of glycerin was measured using parameters such as refractive index, density, and melting point. Values of these parameters were found to be similar than referenced values from the Argentinian pharmacopoeia. Also, the content of glycerin and its quality was compared to the Indicator reference values of different purity grades, expressed in percentages. A superior purity grade was achieved with respect to crude glycerin.

Percentage of glycerin obtained in the biotransformation of coconut and sunflower oil with different methanol:oil ratios at 38.5°C and 100 rpm using immobilized PPL in coconut pulp support (p<0,05)

Met(OH):oil (w/w)	% Coconut oil glycerin	% Sunflower oil glycerin
0.95:1.22	91.15 ± 6.39	65.51 ± 2.77
0.95:2.44 1.58:3.68	89.78 ± 5.31 73.83 ± 5.74	67.88 ± 0.67 98.55 ± 1.23

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References:

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