EFFECT OF TIME OF ENZYMATIC CATALYSIS ON THE PRODUCTION OF METHYL ESTERS FROM FRYING OIL

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There is an increasing global concern about the conservation of natural non-renewable energy resources, development of alternative energy resources and waste recycling. Biodiesel (fatty acid methyl esters) has ecological, social and economical advantages; especially when it is produced from waste. In this work methyl esters production by enzymatic catalysis using frying oil were studied. Different reaction times (12 and 24 hours), methanol concentrations (molar ratio oil:methanol ranging between 1:6,6 and 1:1,8), enzimatic catalyst (lipase type VII from Candida rugosa immobilized in polypropylene) and solvent tertc-butanol (0 to 150% relative to the oil weight) at 40°C were studied. After 12 hours of reaction the maximum yield (70%) was observed to a molar ration oil:methanol of 1:2, enzyme concentration of 2,2% (relative to the oil weight) and 112% of solvent tertc-butanol (relative to oil weight). After 24 hours of reaction it was observed the maximum yield (113%) to a molar ratio oil:methanol 1:2, using 4,7% of enzyme relative to oil weight and 112% of solvent tertc-butanol relative to oil weight. According to the results, 24 hours of reaction under the conditions studied to obtain a yield of 113% biodiesel was required.