

2nd World Congress on Petrochemistry and Chemical Engineering

October 27-29, 2014 Embassy Suites Las Vegas, USA

Production of a solid enzymatic preparation by *Rhizomucor miehei* from a low-cost agroindustrial residue

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The aim of this study was to allot value to one agroindustrial residue through the application in the esterification reaction for the biodiesel production. To fulfill this work the optimization of the solid-state fermentation (SSF) conditions -humidity and temperature- and the supplementation with carbon and nitrogen sources by experimental design was investigated. The SSF was carried out with the fungus *Rhizomucor miehei* on an agroindustrial residue to obtain a dry lipase-rich solid enzymatic preparation (SEP) that was used to obtain ethyl esters in the esterification reaction that was carried out with the utilization of oleic acid and ethanol (molar ratio 1:1). The chosen experimental design was the Plackett & Burman with 16 test variable and the answers variables were the hidrolitic and the esterification reactions. The statistical analysis of the results showed that the highest level of temperature and humidity, and the utilization of a nitrogen source are the best conditions for improve the production of lipases that lead us to a conversion of 86% oleic acid in biodiesel. The utilization of a SEP in the esterification reaction shows an alternative and effective method of biodiesel production with lower costs.

Biography

Jaqueline Greco Duarte is from Rio de Janeiro, Brazil. She graduated in Biologist in 2011 from the Federal University of Rio de Janeiro (UFRJ). In 2013, she finished her M.Sc. studies at School of Chemistry, Federal University of Rio de Janeiro (UFRJ). Currently she is a PhD student in Chemistry Institute, Department of Biochemistry, UFRJ. Her research includes lipase production by solid state fermentation and enzymatic catalysis to biodiesel synthesis.

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