ABSTRACT

This research is aimed to study about the influence of temperature, flowrate in the reactor and the product flow to yield of FAME in the transesterification processes of Calophyllum inophyllum oil to become biodiesel inside the packed bed column. The process includes the extraction of Calophyllum inophyllum oil, disposing gum (degumming), acid catalytic esterification and base catalytic transesterification. The transesterification is done inside the packed bed column with 2.093 cm in diameter, and 75 cm height, with raschig rings packings having diameter 5 mm, 1 mm thick and 6 mm height. In the transesterification process, the independent variables are the molar ratio of methanol versus the oil and the number of NaOH catalyst versus the oil. In the other hand the dependent variables are the temperature, the flowrate inside the reactor and the flow rate of transesterification product, and the respond variable is the percentage of FAME in the product. In order to get the percentage of FAME, the product is analyzed with GC using internal standard method. The result from calculation with Anava can be explain that temperature, flowrate in the reactor and the product flow give influence to percentage of FAME. The experiment with maximum of 43.82 (%) FAME and low viscosity at 24.14 mm²/s obtained in the condition of 60 °C temperature, 14.73 cm³/s flow rate in the reactor and the product flowrate is 0.21 cm³/s.

Keywords: biodiesel, Calophyllum inophyllum oil, transesterification, packed bed