

ABSTRACT

Indonesia as the third largest grain producer in the world, producing large amounts of bran. High Free Fatty Acid (FFA) content in rice bran oil causes it can be converted into the Fatty Acid Methyl Esters (biodiesel) by esterification and transesterification process. The objectives of this study was to use rice bran as raw material for biodiesel production by esterification and transesterification process, studying the influence of time and temperature on the esterification process, and the influence of time and concentration of catalyst in the transesterification process.

The method that used for create methyl esters (biodiesel) in this research is esterification then followed by transesterification. To get the rice bran oil, done by rice bran extraction process using methanol as a solvent, then in the process of esterification of rice bran oil added H₂SO₄ catalyst. After esterification, followed by transesterification to convert the triglycerides into methyl esters (biodiesel) by adding NaOH in accordance with the variables as a neutralizing and catalyst. The constant variable used in the esterification process is the amount of catalyst H₂SO₄ 1% v/v, while in the process of transesterification is the operating temperature of 60 oC.

From GCMS analysis of the result of the biodiesel research product showed that the product contains 92,33% methyl esters with methyl oleat as the largest component, of which is 66.61%. From this research can be concluded that the optimum esterification time to produce methyl esters (biodiesel) is 60 minutes and the optimum temperature is 60 oC, then optimum transesterification time is 120 minutes with the catalyst concentration of NaOH 1.75% w/w.