BIODIESEL PRODUCTION CATALYZED BY ALUMINA SUPPORTED POTASSIUM IODIDE

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ABSTRACT

BIODIESEL PRODUCTION CATALYZED BY ALUMINA SUPPORTED POTASSIUM IODIDE

The conversion of rubber seed oil (RSO) to biodiesel by using transesterification reaction was studied. Heterogeneous base catalyst which is alumina supported potassium iodide, KI/Al_2O_3 was used to carry out the transesterification reaction. The main objective of this study is to determine effect of loading amount of catalyst on the percent yield of biodiesel. The transesterification reaction was carried out in a condition where 12:1 for molar ratio of methanol to oil (MeOH:oil), 60 °C for reaction temperature, 6 hour reaction time and 600 rpm for agitation rate. The different loading amount of catalyst shows significance effect to the percent yield of biodiesel. The optimum amount of catalyst that is 2.0% gives the highest percent yield which is 84.1%. The types of fatty acids that present in the RSO was determined by using gas chromatography-mass spectrometry (GC-MS). GC-MS analysis shows that there are palmitic, stearic, linoleic, and linolenic acid present in the RSO. The free fatty acid (FFA) in RSO was 17.5% whereas the acid value and saponification value are 37.2 mg KOH/g and 191.1 mg KOH/g. Therefore, KI/Al_2O_3 has great potential to be used as a catalyst for producing biodiesel.