

SINTESIS BIODIESEL DARI MINYAK BIJI KAPUK RANDU DENGAN VARIASI SUHU MELALUI PROSES TRANSESTERIFIKASI

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ABSTRAK

Penelitian ini bertujuan untuk mengetahui: 1) rendemen dari minyak biji kapuk randu dan biodiesel hasil sintesa; 2) karakter biodiesel hasil sintesa, meliputi: besarnya massa jenis, viskositas, titik nyala, titik tuang dan kalor pembakaran pada berbagai suhu; 3) karakter biodiesel hasil sintesa jika dibandingkan dengan standar SNI 7182-2012; dan 4) pengaruh suhu terhadap karakter biodiesel hasil transesterifikasi.

Subjek penelitian ini adalah biji kapuk (*Ceiba pentandra. L*) yang diperoleh dari tanaman kapuk yang tumbuh di daerah Gunung Kidul, Yogyakarta. Objek penelitian ini adalah biodiesel dari minyak biji kapuk (*Ceiba pentandra. L*) hasil reaksi transesterifikasi. Penelitian ini dilaksanakan di Laboratorium Kimia FMIPA UNY, dengan metode ekstraksi sokhlet. Transesterifikasi dilakukan dengan metanol 20% b/b, KOH 0,75% b/b, lama pengadukan 50 menit, dan variasi suhu 30, 50, 70, dan 90°C.. Selanjutnya dilakukan karakterisasi gugus fungsi dengan FTIR, massa jenis, viskositas, titik nyala, titik tuang dan kalor pembakaran. Untuk mengetahui pengaruh suhu transesterifikasi terhadap karakter biodiesel dilakukan uji anava AB.

Rendemen minyak hasil ekstraksi sokhlet 30,25167%, rendemen biodiesel hasil transesterifikasi untuk suhu 30, 50, 70, dan 90°C berturut-turut sebesar 66,326; 59,184; 55,102; dan 51,020. Semakin tinggi suhu maka semakin tinggi viskositas. Pengaruh suhu terhadap massa jenis, *flash point*, *pour point*, dan kalor pembakaran adalah tidak teratur.

Kata Kunci : minyak biji kapuk randu, transesterifikasi, biodiesel

SYNTHESIS OF BIODIESEL FROM COTTON SEED OIL WITH TEMPERATURE VARIATION IN TRANSESTERIFICATION PROCESS

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ABSTRACT

This study aims to determine: 1) yield of the cotton seed oil and biodiesel by synthesis; 2) characteristics of biodiesel from transesterification include: density, viscosity, flash point, pour point, and heat of combustion of biodiesel at temperature variation 3) suitability characteristic biodiesel from synthesis, if compared with SNI 7182-2012 standart 4) temperature effect with characteristic biodiesel from transesterification.

The subjects of this research were cotton seeds (*Ceiba pentandra*) obtained from cotton plants that grow in Gunung Kidul areas, Yogyakarta. The object of this study is biodiesel from cotton seed oil (*Ceiba pentandra*. L) the results of the transesterification reaction. In this research was conducted in chemical Lab Faculty UNY and done with soxhlet extraction. Transesterification to convert the oil into biodiesel by using KOH 0.75% w/w and methanol 20% w/w and using the duration of stirring for 50 minutes and the temperature variation of 30, 50, 70, and 90 °C. The next step are: FTIR characterization to know functional groups, density, viscosity, flash point, pour point, and heat of combustion. To know the influence of temperature on character of biodiesel used ANOVA test AB.

Yield from soxhlet extraction are 30.25167%. Yield from esterification for temperature 30, 50, 70, dan 90°C respectively are 66.326; 59.184; 55.102; and 51.020%. The higher temperature effect is viscosity increased. Effect of temperature for density, flash point, pour point, and heat of combustion are random.

Keywords: cotton seed oil, transesterification, biodiesel