PEMBUATAN BIODIESEL DARI BIJI KESAMBI (Schleichera oleosa L.)
(Biodiesel Manufacturing from Kesambi Seed)

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ABSTRACT

Biodiesel is an ester alkyl that can be used as fuel as substitute for diesel engine. Biodiesel was made from biofuel oil either vegetation or animal oil. Kesambi oil (Schleichera oleosa L.) was strongly presumed can be used as raw material for biodiesel due to its fatty acid compositions are almost the same with other biofuel oils. Production process for biodiesel manufacture normally use estrans or esterification-transesterification process. This study examined the effect of some treatments on the characteristics of biodiesel quality. The measured variable factors were : process stage, methanol concentration, and duration time of esterification process. Data analysis was accomplished through randomised complete design with factorial trial.The treatments of process stages were ET (Esterification-transesterification),EET(Esterification-esterification-transesterification),ENT Esterification-netralization-transesterification) and ETN (Esterification-transesterification-netralization). Methanol concentrations were 15 : 1 and 20 : 1 (ratio of methanol molar to oil used). Esterification times were 30 and 60 minutes. Quality analyses were considered on the basis of acid number, moisture, yield, viscosity and density. The results showed range value of moisture content 0.10 – 0.82%, acid number 0.6253–1.330 mg KOH/g oil, kinematic- viscosity 12.70 – 16.40 cSt, density 0.906 –0.920 g/cm3, biodiesel yield after degumming 63.01 – 96.93%. The ENT procedure is concluded as the best method compared with the others.

Key words : Biodiesel, kesambi, acid number, viscosity.

ABSTRAK

Biodiesel adalah senyawa alkil ester yang dapat digunakan sebagai bahan bakar untuk mesin diesel, berasal dari turunan minyak atau lemak nabati/hewani. Minyak kesambi merupakan salah satu sumber bahan baku yang diduga dapat dijadikan biodiesel, karena kandungan asam-asam lemaknya tidak jauh berbeda dengan kandungan dari minyak nabati lainnya yang sudah terbukti bisa dijadikan biodiesel. Proses produksi biodiesel umumnya melalui reaksi esterifikasi, transesterifikasi. Penelitian ini bertujuan untuk mengetahui pengaruh perlakuan proses terhadap kualitas biodiesel yang dihasilkan. Dalam penelitian ini dicoba memvariasikan faktor tahapan proses, jumlah metanol yang digunakan dan waktu esterifikasi. Pada penelitian utama digunakan rancangan percobaan acak lengkap faktorial dengan tiga faktor yaitu tahapan reaksi, jumlah metanol dan waktu esterifikasi. Faktor tahapan reaksi terdiri dari empat taraf yang terdiri dari kombinasi esterifikasi (E), transesterifikasi (T) dan netralisasi (N). Empat