

ABSTRACT

CHARACTERIZATION OF CRUDE PALM OIL (CPO) AND B-CAROTENE EXTRACTED FROM SPENT BLEACHING EARTH (SBE) USING A SOLVENT COMBINATION

By

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Spent bleaching earth (SBE) was a solid waste generated from the purification process of crude palm oil (CPO), consisting of a mixture of clay and oil. SBE generally still contained 20–40% oil and β -carotene present in the oil. The purpose of this study was to determine the effect of a combination of hexane and methanol solvents on the characteristics of CPO and β -carotene extracted from SBE, as well as to identify the best solvent combination treatment. This study employed a non-factorial randomized complete group design (RAKL) with four replications. Treatments consisted of six levels of chloroform and methanol solvent combinations: P1 (100:0), P2 (80:20), P3 (60:40), P4 (40:60), P5 (20:80), and P6 (0:100). The data on oil yield from SBE extraction, β -carotene content in the β -carotene content in the extracted oil, free fatty acid (FFA) content, and ash content were analyzed for homogeneity of variance using Bartlett's test, and the data's additivity was tested using Tukey's test. The data were then analyzed using analysis of variance (ANOVA) and followed by a least significant difference (BNT) test at the 5% significance level. The results showed that the combination of hexane and methanol solvents had a significant effect on all observed parameters. The P1 (100:0) solvent combination produced the highest crude oil yield of 9.080%, the highest β -carotene content of 293.684 ppm, the lowest free fatty acid content of 12.16%, and the lowest ash content of 0.433%.

Keywords : β -carotene, crude palm oil (CPO), maceration, methanol, n-hexane, spent bleaching earth (SBE)

ABSTRAK

KARAKTERISASI *CRUDE PALM OIL* (CPO) DAN β -KAROTEN HASIL EKSTRAKSI *SPENT BLEACHING EARTH* (SBE) DENGAN MENGGUNAKAN KOMBINASI PELARUT

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Spent bleaching earth (SBE) merupakan limbah padat hasil pemurnian *crude palm oil* (CPO) berupa campuran antara tanah liat dan minyak. SBE umumnya masih mengandung 20-40% minyak dan β -karoten yang terdapat dalam minyak. Tujuan penelitian ini untuk mengetahui pengaruh kombinasi pelarut heksana dan metanol terhadap karakteristik CPO dan β -karoten hasil ekstraksi SBE dan perlakuan terbaik dari kombinasi pelarut heksana dan metanol terhadap karakteristik CPO dan β -karoten hasil ekstraksi SBE. Penelitian ini dilakukan dengan menggunakan rancangan acak kelompok lengkap (RAKL) non-faktorial dengan empat kali ulangan. Perlakuan terdiri dari perbandingan pelarut heksana dan metanol sebanyak 6 taraf yaitu P1(100:0); P2 (80:20); P3 (60:40); P4 (40:60); P5 (20:80); P6 (0:100). Data rendemen minyak, kadar β -karoten, kadar ALB, dan kadar abu dianalisis kesamaan ragamnya dengan uji Bartlett dan kemenambahan datanya menggunakan uji Tuckey. Data selanjutnya dianalisis dengan sidik ragam lalu diuji lanjut dengan uji beda nyata terkecil (BNT) pada taraf 5%. Hasil penelitian menunjukkan bahwa kombinasi pelarut heksana dan metanol berpengaruh nyata pada parameter dan kombinasi pelarut P1 (100:0) menghasilkan rendemen *crude* minyak sebesar 9,080%, kadar β -karoten tertinggi sebesar 293,684 ppm, kadar asam lemak bebas terendah sebesar 12,16%, dan menghasilkan kadar abu terendah yaitu 0,433%.

Kata kunci : β -karoten, *crude palm oil* (CPO), heksana, maserasi, metanol, *spent bleaching earth* (SBE)