

ABSTRACT

THE EFFECT OF THE EXTRACTION METHODS AND SOLVENT COMBINATIONS ON β -CAROTENE LEVELS IN OIL EXTRACTS FROM *SPENT BLEACHING EARTH* (SBE)

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Spent Bleaching Earth (SBE) is a by-product of the bleaching process in *Crude Palm Oil* (CPO) refining which still contains 20-40% oil components and color components of β -carotene, which can be extracted and utilized for other purpose. The aim of this study was to determine the appropriate extraction method and solvent combination to extract oil and β -carotene in *Spent Bleaching Earth* (SBE). This research was conducted using a factorial Randomized Complete Group Design, in three replicates and consisted of 9 treatment combinations namely M1R1, M1R2, M1R3, M2R1, M2R2, M2R3, M3R1, M3R2, M3R3, in which M1 was for maceration, M2 was for soxhletation, M3 was for sonication, R1 was for dichloromethane, R2 was for mixture of dichloromethane and petroleum ether, R3 was for petroleum ether. Data on oil yield, β -carotene yield, FFA content, and ash content were analyzed by analysis of variance and then further analyzed by orthogonal contrast. The results showed that M1R1 produced the highest oil yield of 77,18%, M1R2 produced the highest β -carotene concentration of 268 ppm, M1R2 produced the highest β -carotene yield of 1,58 mg/50 g, M1R3 produced the lowest FFA content of 7,85%, dan M2R2 produced the lowest ash content of 0,70%.

Keyword: Spent Bleaching Earth (SBE), oil rendemen, β -carotene, Free Fatty Acid (FFA), ash content

ABSTRAK

PENGARUH METODE EKSTRAKSI DAN KOMBINASI PELARUT TERHADAP KADAR β -KAROTEN DALAM EKSTRAK MINYAK DARI *SPENT BLEACHING EARTH* (SBE)

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Spent Bleaching Earth (SBE) merupakan hasil samping dari proses *bleaching* pada pengolahan *Crude Palm Oil* (CPO) yang masih mengandung komponen minyak sebanyak 20-40% serta komponen warna berupa β -karoten yang dapat diekstrak dan dimanfaatkan untuk kepentingan lainnya. Tujuan penelitian ini adalah untuk mengetahui metode ekstraksi dan kombinasi pelarut yang tepat untuk mengekstrak minyak dan β -karoten di dalam *Spent Bleaching Earth* (SBE). Penelitian ini dilakukan dengan menggunakan rancangan acak kelompok lengkap (RAKL) faktorial dan tiga kali ulangan untuk setiap ulangan dan terdiri dari 9 kombinasi perlakuan yaitu M1R1, M1R2, M1R3, M2R1, M2R2, M2R3, M3R1, M3R2, M3R3, dimana M1 untuk maserasi, M2 untuk soxhletasi, M3 untuk sonikasi, R1 untuk pelarut diklorometana, R2 untuk campuran pelarut diklorometana dan petroleum eter, R3 untuk pelarut petroleum eter. Data rendemen minyak, yield β -karoten, kadar ALB, dan kadar abu dianalisis sidik ragam lalu diuji lanjut dengan uji perbandingan ortogonal. Hasil penelitian menunjukkan bahwa M1R1 menghasilkan rendemen minyak tertinggi sebesar 77,18%, M1R2 menghasilkan konsentrasi β -karoten tertinggi sebesar 268 ppm, M1R2 menghasilkan rendemen β -karoten tertinggi sebesar 1,58 mg/50g, M1R3 menghasilkan kadar ALB terendah sebesar 7,85%, and M2R2 menghasilkan kadar abu terendah sebesar 0,70%.

Kata kunci: *Spent Bleaching Earth* (SBE), rendemen minyak, β -karoten, asam lemak bebas, kadar abu