

**TEKNIK KENDALI PROSES PRODUKSI MINYAK SAWIT MERAH
SERTA APLIKASINYA PADA BEBERAPA PRODUK PANGAN (*COCOA
BUTTER EQUIVALENT*, MINUMAN EMULSI, DAN MIKROENKAPSULAT)
(The Control Techniques in The Production Process of Red Palm Oil and Its Application
in Some Food Products (Cocoa Butter Equivalent, Emulsion Drink and
Microencapsulate))**

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ABSTRAK

Tujuan penelitian ini adalah mengupayakan teknik kendali proses dalam produksi minyak sawit merah serta aplikasinya pada beberapa produk pangan seperti teknik formulasi dan produksi *Cocoa Butter Equivalent* (CBE), minuman emulsi serta mikroenkapsulat. Hasil penelitian ini pada proses deodorisasi minyak sawit merah pada suhu 140 °C selama 1 jam direkomendasikan sebagai kondisi deodorisasi terbaik (kadar karoten 70%; 375,33 mg/kg); mereduksi odor sampai intensitas 3,3. Kadar β karoten dalam NRPO : 336.34 ± 3.20 ppm, terdegradasi mengikuti ordo satu (persamaan Arrhenius $E_a = 55581.89$ J/mol, $k = 5974.996 \exp(-5416.97/T)$). Proses *blending* menghasilkan produk CBE dengan distribusi TAG yang mirip dengan CB. SMP produk CBE hasil *blending* relatif lebih tinggi dari SMP CB. Proses fraksinasi memekatkan TAG cukup tinggi. Formulasi minuman emulsi yang dipilih rasio minyak:air = 7:3 untuk emulsifier Tween-80 dan 6:4 untuk emulsifier sukrosa ester asam lemak tipe S-1570, P-1570, dan tipe S ber-HLB 15. Berdasarkan kemampuannya untuk menghasilkan mutu mikroenkapsulat minyak sawit merah yang terbaik pada parameter kadar air, rendemen, retensi β -karoten, kelarutan, warna diperoleh dengan menggunakan *tray dryer* yang dimodifikasi dengan tipe *box*.

Kata kunci : Minyak sawit merah, kendali proses, *cocoa butter equivalent* (CBE), minuman emulsi, mikroenkapsulat.

ABSTRACT

The purpose of this research is to seek control techniques in the production process of red palm oil and its application in some food products such as Cocoa Butter Equivalent formulations technique and production (CBE), emulsion drink, mikroencapsulate. The results of this research on the process deodorization red palm oil at a temperature of 140 °C for 1 hour is recommended as the best deodorisasi condition for being able to retain nearly 70% of carotenoids (375.33 mg / kg) and simultaneously able to reduce Odor intensity level 3.3. B-carotene levels in NRPO still quite high, reaching $336.34 \pm 3:20$ ppm. β -carotene in order NRPO degraded following one, using the Arrhenius equation obtained $E_a = 55581.89$ J / mol, with the equation: $k = 5974,996 \exp (-5416.97 / T)$. The process of blending with fat CBE products with TAG distribution is similar to CB. SMP products blending CBE results are relatively higher than SMP CB. Fractination process successfully concentrated on the main TAG is high enough in the product. Emulsion formulation selected drink include oil ratio: water = 7:3 for the emulsifier Tween-80 and 6:4 for the emulsifier sucrose fatty acid ester type S-1570, P-1570, and the type S to HLB 15. Based on its ability to produce quality red palm oil mikroencapsulate is the best in quality parameters water content, yield mikroencapsulate products, β -carotene retention, solubility in water, powder color and the color of the solution using modified tray dryers.

Keywords : Red palm oil, control processes, cocoa butter equivalent (CBE), emulsion drink, mikroencapsulate.