

Intisari

Tujuan penelitian ini adalah untuk menentukan formulasi mikroemulsi asam lemak *Ulva lactuca* stabil yang diaplikasikan pada minuman teh hijau. Penelitian ini diawali dengan Tahap Preparasi dan dilanjutkan dengan 2 Tahap penelitian. Tahap Preparasi berupa pengambilan sampel, identifikasi alga dan ekstraksi asam lemak *Ulva lactuca*. Tahap 1 berupa pembuatan formulasi mikroemulsi o/w stabil dan Tahap II berupa pengujian stabilitas mikroemulsi o/w. Mikroemulsi asam lemak *Ulva lactuca* yang stabil setelah itu diaplikasikan pada minuman teh hijau. Formula surfaktan, penambahan air dan konsentrasi asam lemak *Ulva lactuca* diuji indeks turbiditas dan kenampakannya setelah inkubasi 24 jam dan pemanasan 105°C selama 5 jam. Pengujian stabilitas mikroemulsi asam lemak *Ulva lactuca* dilakukan dengan pengenceran 1:1, 1:9, 1:99 pada pH 4, 5 dan 6. Aplikasi mikroemulsi asam lemak *Ulva lactuca* pada minuman teh hijau dilakukan pada pengenceran 1:1, 1:9 dan 1:99 dengan parameter uji indeks turbiditas dan kenampakan setelah inkubasi 24 jam, sentrifugasi 3.000 rpm selama 25 menit dan pemanasan 105°C selama 5 jam. Komposisi asam lemak diuji menggunakan metode GC (*gas chromatography*). Mikroemulsi dengan campuran surfaktan Tween 80: Span 80: Tween 20 perbandingan 92: 5,5: 2,5 stabil pada penambahan air 46% dan konsentrasi asam lemak *Ulva lactuca* 300 ppm. Formulasi mikroemulsi stabil pada semua perlakuan pengenceran dan pH. Perlakuan mikroemulsi teh hijau 1:1, 1:9 dan 1:99 memiliki kandungan asam lemak tak jenuh ganda yaitu asam linoleat (C18:2 ω -6), asam linolenat (C18:3), asam dokosdienoat (C22:2), asam eikosapentaenoat (C20:5) dan asam dokosaheksaenoat (C22:6). Rasio asam lemak tak jenuh ganda banding asam lemak jenuh pada perlakuan mikroemulsi teh hijau 1:1, 1:9 dan 1:99 berturut-turut sebesar 0,10±0,08; 0,02±0,03 dan 0,05±0,01%.

Kata kunci: asam lemak, formula mikroemulsi, stabilitas mikroemulsi, teh hijau, *Ulva lactuca*

Abstract

The objective of this research is to determine stable formulation of *Ulva lactuca* fatty acid microemulsion applied on green tea. This research begins with the preparation stage and continued with 2 stages of research. The preparation stage was sampling, identification and extraction of *Ulva lactuca* fatty acid. The first stage of the research was making a stable oil in water (o/w) microemulsion formulation and second stage was stability testing. The stable *Ulva lactuca* fatty acid microemulsions then applied on green tea. Formulation of surfactant, water and *Ulva lactuca* fatty acid concentration were tested with turbidity index and visibility after 24 hours incubation and heating process at 105°C in 5 hours. The stability of *Ulva lactuca* fatty acid microemulsions was tested at 1:1, 1:9, 1:99 dilutions with pH 4, 5 and 6. Application of *Ulva lactuca* fatty acid microemulsions on green tea was tested at 1:1, 1:9 and 1:99 dilution with turbidity index and visibility after 24 hours incubation, 3.000 rpm centrifugation at 25 minutes and heating at 105°C in 5 hours. Fatty acid composition was tested using the GC (gas chromatography) method. Microemulsion with a mixture of surfactants Tween 80: Span 80: Tween 20 with ratio 92: 5,5: 2,5 was stable at 46% addition of water and *Ulva lactuca* fatty acid with a concentration of 300 ppm. Microemulsion formulation was stable in all dilution and pH treatments. The treatment of microemulsion:green tea (1:1, 1:9 and 1:99) had polyunsaturated fatty acids linoleic acid (C18:2 ω-6), linolenic acid (C18:3), docosdienoic acid (C22:2), eicosapentaenoic acid (C20:5) and docosahaxaenoic acid (C22:6). The polyunsaturated fatty acid ratio compared to saturated fatty acids in green tea microemulsion treatments 1:1, 1:9 and 1:99 were 0,10±0,08; 0,02±0,03 and 0,05±0,01%, respectively.

Key words: fatty acid, green tea, microemulsion formula, microemulsion stability, *Ulva lactuca*