

**FORMULASI DAN STABILITAS SEDIAAN MIKROEMULSI DARI
EKSTRAK KAYU SECANG (*CAESALPINIA SAPPAN L.*)
DAN *VIRGIN COCONUT OIL* (VCO)**

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INTISARI

Telah dilakukan penelitian untuk membuat sediaan mikroemulsi dari *virgin coconut oil* (VCO) dan ekstrak kayu secang. Tujuan penelitian ini untuk mengetahui karakteristik ekstrak kayu secang dengan pelarut etanol, menentukan nilai *Hydrophilic Lipophilic Balance* (HLB) dari campuran 3 surfaktan yang dapat membentuk sediaan mikroemulsi paling stabil, dan menentukan variasi konsentrasi ekstrak kayu secang paling optimal dalam formulasi mikroemulsi secang.

Penelitian ini diawali dengan pembuatan ekstrak etanol kayu secang dari bubuk kayu secang dan etanol 96%, kemudian diuji kadar flavonoidnya. Selanjutnya mikroemulsi VCO dalam campuran air dengan ekstrak secang dibuat dengan variasi nilai HLB, yaitu 12, 13, 14, dan 15. Mikroemulsi dengan variasi HLB diuji kestabilannya melalui pengamatan organoleptis dan nilai turbiditas dengan perlakuan penyimpanan pada suhu ruang, pemanasan, dan sentrifugasi. Mikroemulsi juga diuji kadar *free fatty acid* (FFA). Setelah itu, pembuatan mikroemulsi dengan HLB paling stabil dilakukan dengan variasi konsentrasi ekstrak kayu secang dalam formulasinya. Mikroemulsi dengan variasi ekstrak diuji kestabilannya melalui pengamatan organoleptis dan nilai turbiditas setelah 24 jam, pemanasan, dan sentrifugasi. Mikroemulsi dengan konsentrasi ekstrak kayu secang yang optimal diuji aktivitas antioksidannya.

Ekstrak secang yang dihasilkan dari ekstraksi berwarna coklat kemerahan dan memiliki total flavonoid setara dengan 230,6 mg QE/g sampel. Mikroemulsi yang paling stabil dari penelitian ini adalah mikroemulsi dengan nilai HLB 15 dengan rasio air:ekstrak:VCO:surfaktan yaitu 65:2,5:2,5:30. Kenampakan mikroemulsi berwarna merah transparan, 1 fase, dan berbau seperti Tween 80 dengan nilai turbiditas di bawah 1% selama penyimpanan, pemanasan, maupun sentrifugasi dengan nilai FFA mikroemulsi sebesar 0,53%. Berdasarkan variasi konsentrasi ekstrak kayu secang, semakin tinggi konsentrasi ekstrak, maka semakin tidak stabil mikroemulsi yang dihasilkan. Mikroemulsi ekstrak secang 3% merupakan mikroemulsi yang paling optimal dengan aktivitas antioksidan (IC₅₀) sebesar 1,4573±0,2694 mg/mL.

Kata kunci: mikroemulsi, secang, surfaktan, *virgin coconut oil*.

**FORMULATION AND STABILITY OF MICROEMULSION FROM
SAPPAN WOOD EXTRACT (CAESALPINIA SAPPAN L.)
AND VIRGIN COCONUT OIL (VCO)**

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ABSTRACT

Research has been carried out to make the most stable microemulsion preparations from virgin coconut oil (VCO) and sappan wood extract. The purpose of this study was to determine the characteristics of sappan wood extract with ethanol solvent, determine the Hydrophilic Lipophilic Balance (HLB) value of a mixture of 3 surfactants that can form the most stable microemulsion preparations, and determine the most optimal variations of sappan wood extract concentrations in sappan microemulsion formulations.

This research began with the preparation of sappan wood ethanol extract from sappan wood powder and 96% ethanol. Furthermore, VCO microemulsions in water were made with variations in HLB values, namely 12, 13, 14, and 15. Microemulsions with HLB variations were tested for stability through organoleptic observations and turbidity values with storage at room temperature, heating, and centrifugation. The microemulsion was also evaluated for free fatty acid (FFA) levels. After that, the preparation of microemulsions with the most stable HLB was carried out with various concentrations of sappan wood extract. Microemulsions with various extracts were evaluated for stability by observing organoleptic and turbidity values after 24 hours, heating and centrifugation. Microemulsion with optimal concentration of sappan wood extract was tested for its antioxidant activity.

Sappan extract produced from the extraction is reddish brown in color and has a total flavonoid equivalent of 230.6 mg QE/g sample. The most stable microemulsion from this study was a microemulsion with an HLB value of 15 and a ratio of water:extract:VCO:surfactant, namely 65:2.5:2.5:30. The appearance of the microemulsion is transparent red, 1 phase, and smells like Tween 80 with a turbidity value below 1% during storage, heating and centrifugation. The microemulsion FFA value was 0.53%. Based on variations in the concentration of sappan wood extract, the higher the concentration of the extract, the more unstable the resulting microemulsion. The 3% sappan extract microemulsion was the most optimal microemulsion with an antioxidant activity (IC_{50}) of 1.4573 ± 0.2694 mg/mL.

Key words: microemulsion, sappan, surfactant, virgin coconut oil.