

**FORMULASI MIKROEMULSI BERBAHAN *VIRGIN COCONUT OIL*
DENGAN VARIASI JUMLAH EKSTRAK DAUN KELOR (*Moringa
Oleifera*) UNTUK SEDIAAN *HAND SANITIZER***

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INTISARI

Telah dilakukan formulasi mikroemulsi berbahan *virgin coconut oil* (VCO) dengan variasi jumlah ekstrak daun kelor (*Moringa oleifera*) untuk sediaan *hand sanitizer*. Tujuan dari penelitian ini untuk mengetahui perbandingan kombinasi surfaktan pada mikroemulsi yang dapat membentuk sistem mikroemulsi yang stabil dan mengetahui aktivitas antibakteri dari sediaan mikroemulsi berbahan VCO dan ekstrak daun kelor terhadap bakteri *Staphylococcus aureus*.

Mikroemulsi dibuat dari VCO sebagai fase minyak dan ekstrak daun kelor yang dilarutkan dalam akuades sebagai fase air. Ekstrak daun kelor dibuat dari daun kelor kering yang dimaserasi dengan etanol 96% selama 2 hari yang kemudian dievaporasi. Mikroemulsi dibuat dengan variasi HLB 12, 13, 14, dan 15 yang selanjutnya diuji kestabilannya meliputi uji organoleptik, penyimpanan pada suhu ruang, pemanasan, sentrifugasi, dan kandungan asam lemak bebasnya. HLB mikroemulsi yang paling stabil digunakan untuk membuat mikroemulsi dengan variasi ekstrak daun kelor 2 mL; 2,25 mL, 2,5 mL, dan 2,75 mL. Mikroemulsi variasi jumlah ekstrak daun kelor diuji aktivitas antibakterinya terhadap bakteri *S. aureus*.

Hasil penelitian didapatkan mikroemulsi paling stabil jika menggunakan surfaktan dengan HLB 14 dengan formulasi 2,5 mL ekstrak daun kelor, 2,5 mL VCO, 30 mL surfaktan, dan 65 mL akuades. Mikroemulsi memiliki warna hijau transparan, 1 fase, dan berbau campuran ekstrak daun kelor, VCO, dan surfaktan. Turbiditas mikroemulsi selama penyimpanan pada suhu ruang selalu <1% dan mempunyai kadar FFA sebesar 0,53%. Jumlah ekstrak dalam formulasi berpengaruh terhadap kestabilan mikroemulsi yang dihasilkan ditandai dengan kenaikan turbiditas seiring dengan kenaikan jumlah ekstrak dalam formulasi. Mikroemulsi dengan variasi jumlah ekstrak daun kelor 2,5 mL dalam formulasi memiliki zona hambat aktivitas antibakteri paling baik yaitu dengan diameter zona hambat 5,33 mm.

Kata kunci : HLB, kelor, mikroemulsi, turbiditas, dan VCO.

***FORMULATION OF MICROEMULSIONS FROM VIRGIN COCONUT OIL
WITH VARIATIONS OF MORINGA LEAF EXTRACT (*Moringa oleifera*)
FOR HAND SANITIZER***

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ABSTRACT

Microemulsion formulation made from virgin coconut oil (VCO) with varying amounts of moringa leaf extract for hand sanitizer preparation has been carried out. The purpose of this study was to determine comparison of surfactant combinations in microemulsions that can form a stable microemulsion system and to determine the antibacterial activity of microemulsion preparations made from VCO and moringa leaf extract against *Staphylococcus aureus* bacteria.

Microemulsion was prepared from VCO as the oil phase and moringa leaf extract dissolved in distilled water as the water phase. Moringa leaf extract was prepared from dried moringa leaves macerated with 96% ethanol for 2 days and then evaporated. Microemulsions were made with variations of HLB 12, 13, 14, and 15 which were then tested for stability including organoleptic tests due to storage at room temperature, heating, centrifugation, and free fatty acid content. The most stable microemulsion HLB was used to make microemulsions with a variation of moringa leaf extract 2 mL; 2.25 mL, 2.5 mL, and 2.75 mL. Microemulsion of various amounts of moringa leaf extract was tested for its antibacterial activity against *S. aureus* bacteria.

The results showed that the most stable microemulsion was obtained using a surfactant with an HLB of 14 with the formulation of 2.5 ml of moringa leaf extract, 2.5 ml of VCO, 30 ml of surfactant and 65 ml of distilled water. Microemulsion has a transparent green color, 1 phase, and smells of a mixture of moringa leaf extract, VCO, and surfactants. Microemulsion turbidity during storage at room temperature is always <1% and has an FFA content of 0.53%. The amount of extract in the formulation affects the stability of the resulting microemulsion which is indicated by an increase in turbidity along with the increase in the amount of extract in the formulation. Microemulsion with varying amounts of 2.5 mL moringa leaf extract in the formulation had the best inhibition zone of antibacterial activity with a diameter of 5.33 mm.

Keywords: HLB, microemulsion, moringa, turbidity, and VCO.