

ABSTRAK

FORMULASI NANOEMULSI MINYAK ATSIRI KAYU MANIS (*Cinnamomum burmannii*) MENGGUNAKAN KOMBINASI SURFAKTAN TWEEN 80 DAN SPAN 80 SEBAGAI KANDIDAT PENGobatan OTOMIKOSIS

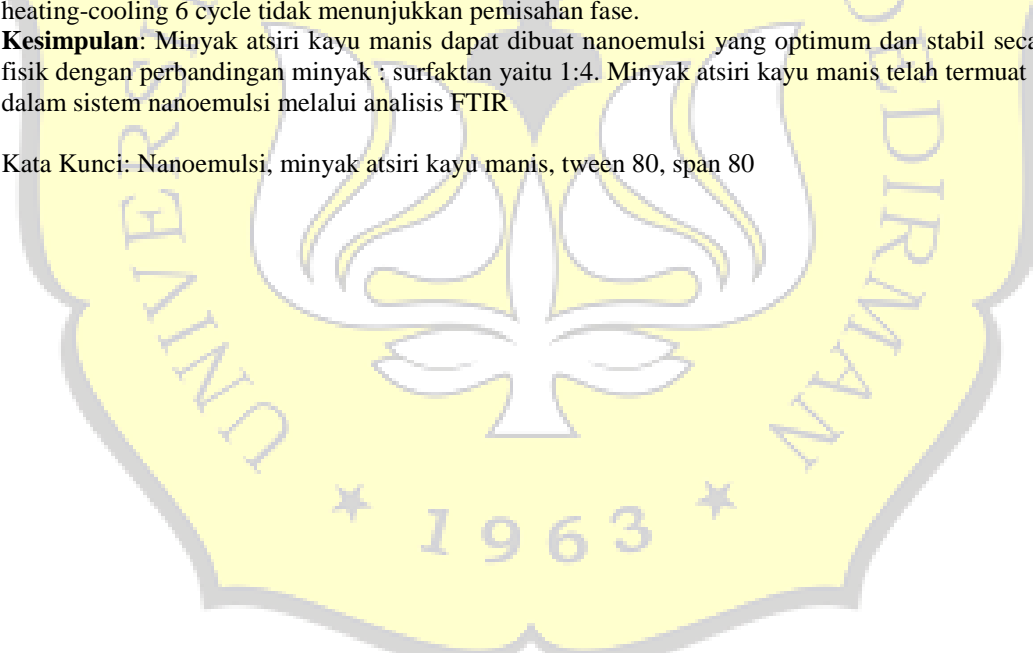
Latar Belakang: Minyak atsiri kayu manis merupakan bahan alam yang diketahui memiliki efek antijamur termasuk jamur penyebab otomikosis. Namun, minyak atsiri kayu manis memiliki kelarutan dalam air rendah, mudah menguap, teroksidasi dan senyawa aktif sinamaldehyd memiliki bioavailabilitas yang rendah dalam tubuh. Nanoemulsi cukup efektif untuk mengatasi hal tersebut. Penelitian ini bertujuan untuk membuat nanoemulsi minyak atsiri kayu manis dengan kombinasi surfaktan tween 80 dan span 80 dan dilakukan karakterisasi sediaananya.

Metodologi: Nanoemulsi dibuat dengan metode energi rendah menggunakan kombinasi surfaktan tween 80, span 80 dan kosurfaktan propilen glikol. Dilakukan karakterisasi nanoemulsi minyak atsiri kayu manis meliputi ukuran partikel dan distribusi ukuran partikel, zeta potensial, morfologi, analisis FTIR serta evaluasi stabilitas fisik penyimpanan pada suhu ruang dan *heating-cooling cycle*

Hasil Penelitian: Nanoemulsi minyak atsiri kayu manis dengan formula rasio zat aktif dan jumlah surfaktan 1:4 meliputi 6% minyak atsiri, 15.6% tween 80, 8,4% span 80 dan 10% propilen glikol memiliki karakteristik ukuran partikel rata-rata $21,92 \pm 1,16$ nm, indeks polidispersitas $0,17 \pm 0,03$, zeta potensial -12,1 mV, morfologi partikel sferis, spektrum FTIR menunjukkan kesamaan bilangan gelombang gugus fungsi antara nanoemulsi minyak atsiri kayu manis dengan minyak atsiri kayu manis dengan sedikit pergeseran. Hasil uji stabilitas nanoemulsi di suhu ruang selama 1 bulan dan *heating-cooling cycle* 6 cycle tidak menunjukkan pemisahan fase.

Kesimpulan: Minyak atsiri kayu manis dapat dibuat nanoemulsi yang optimum dan stabil secara fisik dengan perbandingan minyak : surfaktan yaitu 1:4. Minyak atsiri kayu manis telah termuat ke dalam sistem nanoemulsi melalui analisis FTIR

Kata Kunci: Nanoemulsi, minyak atsiri kayu manis, tween 80, span 80



ABSTRACT

FORMULATION OF CINNAMOMUM ESSENTIAL OIL (*Cinnamomum burmannii*) NANOEMULSION USING SURFACTANTS COMBINATION OF TWEEN 80 AND SPAN 80 AS CANDIDATE FOR TREATMENT OF OTOMYCOSIS

Background: Cinnamon essential oil is a natural ingredient that is known to have antifungal effects, including the fungus that causes otomycosis. However, cinnamon essential oil has low water solubility, easily evaporates and oxidizes and the active compound cinnamaldehyde has low bioavailability in the body. Nanoemulsion is quite effective to overcome this. This study aims to make cinnamon essential oil nanoemulsions with a combination of tween 80 and span 80 surfactants and to characterize them.

Methodology: The nanoemulsion was prepared using a low energy method using a combination of tween 80, span 80 and propylene glycol cosurfactants. Furthermore, the characterization of cinnamon essential oil nanoemulsion includes particle size and distribution, zeta potential, morphology, FTIR analysis and evaluation of stability by storage at room temperature and heating-cooling cycles.

Results: Cinnamon essential oil nanoemulsion with a formula for the ratio of active substances and the amount of surfactant 1:4 includes 6% essential oil, 15.6% tween 80, 8.4% span 80 and 10% propylene glycol having an particle size 21.92 ± 1.16 nm, polydispersity index 0.17 ± 0.03 , zeta potential -12.1 mV, spherical shape morphology, FTIR analysis showed a comfortable number of functional groups between cinnamon nanoemulsion and cinnamon essential oil with slight shift. The results of the stability test of the nanoemulsion at room temperature for 1 month and 6 cycles of heating-cooling did not show any phase improvement.

Conclusion: Cinnamon essential oil can be prepared of optimum and stable nanoemulsion at various temperatures with an oil : surfactant ratio of 1:4. Cinnamon essential oil has been loaded into the nanoemulsion system through FTIR analysis.

Keywords: Nanoemulsion, cinnamon essential oil, tween 80, span 80