

Formulasi mikroemulsi asiaticosida sebagai sediaan kosmetik anti-aging = Asiaticoside microemulsion formulation as anti-aging cosmetic preparation

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Abstrak

Asiaticosida adalah konstituen utama yang diisolasi dari *Centella asiatica* (L.) dan merupakan salah satu zat aktif yang banyak digunakan untuk mencegah penuaan kulit. Namun, asiaticosida memiliki masalah ketidakstabilan karena mudah teroksidasi dan terdegradasi. Hal ini dapat mempengaruhi stabilitas asiaticosida dalam sediaan kosmetik. Penelitian ini bertujuan untuk mendapatkan mikroemulsi asiaticosida sebagai sistem pembawa yang dapat meningkatkan stabilitas asiaticosida dan memfasilitasinya sebagai sediaan kosmetik. Pada penelitian ini, optimasi mikroemulsi asiaticosida dilakukan dengan memformulasikan mikroemulsi menggunakan isopropil miristat (sebagai fase minyak) dengan konsentrasi surfaktan (Tween 80) yang berbeda, yaitu F1 = 20%, F2 = 25%, dan F3 = 30%. Mikroemulsi dibuat dengan menggunakan metode titrasi fase. Ketiga formula yang diproduksi dievaluasi dalam hal organoleptik, distribusi ukuran partikel, pH, bobot jenis, viskositas, rheologi dan tegangan permukaan, cycling test, sentrifugasi, uji stabilitas 6 minggu pada $5\pm 3^{\circ}\text{C}$ dan $30\pm 2^{\circ}\text{C}$, serta uji penetapan kadar selama 5 minggu penyimpanan. Mikroemulsi jernih dihasilkan dari F2 dan F3, sedangkan F1 tampak keruh dan terjadi pemisahan fase. Uji penetapan kadar menunjukkan bahwa kadar asiaticosida selama 5 minggu dalam formula F1, F2 dan F3 berturut-turut adalah $65,25 \pm 13,73\%$; $42,62 \pm 15,72\%$ dan $68,50 \pm 5,94\%$. Dapat disimpulkan bahwa mikroemulsi yang mengandung asiaticosida yaitu F2 dan F3 memenuhi persyaratan dan stabil secara fisik selama penyimpanan 6 minggu. Namun, belum dapat meningkatkan stabilitas kimia asiaticosida selama penyimpanan 5 minggu.

.....Asiaticoside is the main constituent isolated from *Centella asiatica* (L.), and is one of the active substances widely used to prevent skin aging. However, asiaticoside has instability problems because it is easily oxidized and degraded. This can affect the stability of asiaticoside in cosmetic preparations. The aim of this study was to obtain an asiaticoside-containing microemulsion as a carrier system that could increase the stability of asiaticoside and facilitate it as a cosmetic preparation. In this study, optimization of the asiaticoside-containing microemulsion was carried out by formulating the microemulsion using isopropyl myristate (as an oil phase) with different surfactant (Tween 80) concentrations, namely F1 = 20%, F2 = 25%, and F3 = 30%. The microemulsion was prepared by using the phase titration method. The three formulations manufactured were evaluated in terms of their organoleptic, particle size distribution, pH, mass density, viscosity, rheology and surface tension. Moreover, a cycling test, centrifugation method, 6-week stability test at $5\pm 3^{\circ}\text{C}$ and $30\pm 2^{\circ}\text{C}$, and drug content assay during 5-week of storage were also conducted. Clear microemulsions were produced from F2 and F3, while F1 looked cloudy and phase separation occurred. The assay results showed that the asiaticoside levels for 5 weeks in F1, F2 and F3 were $65.25 \pm 13.73\%$; $42.62 \pm 15.72\%$ and $68.50 \pm 5.94\%$, respectively. It can be concluded that the asiaticoside microemulsions F2 and F3, meet the requirements and were physically stable during 6 weeks of storage. However, it has not been able to increase the chemical stability of asiaticoside during 5 weeks of storage.