INTISARI

Paparan sinar UV menyebabkan terjadinya *photoaging*. Senyawa *photoprotector* dapat digunakan untuk pencegahan, salah satunya dalam bentuk sediaan *sunscreen*. *Sunscreen* yang sudah beredar ditemui potensi *adverse effect* dan pencemaran lingkungan. Minyak nyamplung (*Calophyllum inophyllum* L.) memiliki potensi sebagai *photoprotector* karena memiliki aktivitas perlindungan sinar UV dengan nilai SPF 30,46. Minyak nyamplung memiliki kekurangan berupa hidrofobisitas, sehingga pada penelitian akan dilakukan pembuatan *sunscreen* minyak nyamplung dalam bentuk mikroemulgel yang memenuhi persyaratan sifat fisik dan stabilitas, serta memiliki aktivitas sebagai *sunscreen* dan *antiaging*. Metode penelitian meliputi optimasi formula mikroemulsi minyak nyamplung dan inkorporasi pada basis gel. Optimasi formula berdasarkan pengamatan ukuran *droplet*, indeks polidispersitas (PDI), dan potensial zeta dengan analisis menggunakan *Design Expert*. Uji aktivitas sediaan berupa penentuan nilai SPF, persen transmisi eritema (%Te), persen transmisi pigmentasi (%Tp), serta persen sisa aktivitas enzim elastase secara *in vitro*. Stabilitas sediaan diuji sifat fisiknya terhadap pengaruh penyimpan, suhu, dan fotostabilitas; serta diuji keamanannya dengan uji iritasi akut. Formula optimum mikroemulsi memiliki ukuran *droplet* 172,46 nm; PDI 0,196; dan potensial zeta -6,36 mV. Mikroemulgel yang terbentuk memenuhi persayaratan fisik sediaan gel, stabil selama masa simpan dan pengaruh suhu. Sediaan menunjukkan penurunan nilai SPF 18,19% pada uji fotostabilitas. Hasil uji aktivitas menunjukan nilai SPF sediaan 25,73 (pengenceran konsentrasi 10%), nilai %Te dan %Tp kategori perlindungan *sunblock*, serta memberikan aktivitas anti elastase pada seri kadar 5; 7,5; dan 10% masing-masing sebesar 85,19%; 80,25%; dan 62,96%. Hasil penelitian menunjukkan sediaan mikroemulgel *sunscreen* berpotensi dikembangkan lebih lanjut untuk siap dipasarkan.

Kata Kunci : mikroemulsi gel, minyak nyamplung, *sunscreen*, *antiaging*

ABSTRACT

UV light exposure causes photoaging. Photoprotector compounds can be used for prevention in the form of sunscreen. Sunscreens that have been circulating are found to have potential side effects and environmental pollution. Nyamplung oil (*Calophyllum inophyllum* L.) has potential as photoprotector because it has UV protection activity with an SPF value of 30.46. Nyamplung oil has a disadvantage in the form of hydrophobicity, so this research will be carried out to make nyamplung oil sunscreen in the form of microemulgels that meet the requirements for physical properties and stability, and have activity as sunscreen and antiaging. The research method included optimizing the nyamplung oil microemulsion formula and combining it on a gel base. The optimization formula is based on observations of droplet size, polydispersity index (PDI), and zeta potential by analysis using Design Expert. Tests for the activity of the sunscreen included determine the SPF value, percentage of erythema transmission (%Te), percentage of pigmentation transmission (%Tp), and percentage of residual elastase enzyme activity in vitro. The stability of the sunscreen was tested for its physical properties against the effects of storage, temperature and photostability; and tested for safety by acute irritation test. The optimum microemulsion formula has a droplet size of 172,46 nm; a PDI of 0,196; and a zeta potential of -6,36 mV. The formed microemulgel meets the physical requirements of a gel preparation, and stable during the storage period and the effect of temperature. The sunscreen showed a decrease in SPF value of 18,19% in the photostability test. The activity test results showed the sunscreen has SPF value 25,73 (dilution concentration of 10%), and the category of %Te and %TP value for sunblock protection, as well as providing anti-elastase activity at series concentration 5; 7,5; and 10% respectively at 85,19%; 80,25%; and 62,96%. The results of the study indicated that microemulgel sunscreen have the potential to be further developed to be ready for market.
Keywords: microemulgel, nyamplung oil, sunscreen, antiaging