

INTISARI

PARISTI, L.M., 2019, PENGARUH MUATAN *GELLING AGENT* DAN *ENHANCER* TERHADAP PROFIL DIFUSI DAN AKTIVITAS ANTIOKSIDAN NANOEMULGEL RESVERATROL.

Resveratrol (3,5,4'- trihydroxystilbene) merupakan senyawa polifenol yang memiliki aktivitas antioksidan tetapi sukar larut dalam air (0,05 mg/mL), sehingga dibuat sediaan nanoemulgel yang dapat meningkatkan kelarutan resveratrol. Penelitian ini bertujuan untuk mendapatkan formula nanoemulsi untuk diinkorporasikan ke dalam *gelling agent* (nanoemulgel), mengetahui pengaruh muatan *gelling agent* dan *enhancer* terhadap profil difusi dan aktivitas antioksidan nanoemulgel resveratrol.

Formula nanoemulsi diperoleh berdasarkan skrining minyak, surfaktan, dan kosurfaktan dan dibuat dengan metode *self-emulsifikasi*. Formula nanoemulsi dipilih berdasarkan nilai persen transmitten, *drug loading*, ukuran partikel dan potensial zeta. Formula terpilih akan diinkorporasikan dengan *gelling agent* kitosan atau Carbopol dan penambahan *enhancer* Transcutol CG sehingga terbentuk nanoemulgel. Nanoemulgel dikarakterisasi viskositas, profil difusi, *freeze thaw* dan dianalisis aktivitas antioksidannya. Data yang diperoleh selanjutnya diolah dengan *Design Expert* versi 7.1.5 untuk mengetahui pengaruh muatan *gelling agent* dan *enhancer*.

Hasil skrining komponen nanoemulsi diperoleh Capryol sebagai minyak, Kollipor EL sebagai surfaktan, dan PEG 400 sebagai kosurfaktan dengan rasio minyak : surfaktan 4:6 dan surfaktan : kosurfaktan 2:1 konsentrasi 2% . Formula nanoemulsi menghasilkan, nilai persen transmitten 76-89,8%, *drug loading* 105, 42 mg/mL, ukuran partikel $38,48 \pm 0,35\text{nm}$, dan potensial zeta -8,3675 mV. Viskositas nanoemulgel Carbopol mengalami penurunan setelah uji *freeze thaw* dengan 6 siklus. Muatan *gelling agent* positif (kitosan) berpengaruh dominan terhadap respon kumulatif, fluks, dan AUC total daripada *enhancer*. Interaksi antara muatan *gelling agent* dan *enhancer* dapat meningkatkan respon perubahan inhibisi antioksidan.

Kata kunci: Resveratrol, *Nanoemulgel*, difusi, muatan *gelling agent*, aktivitas antioksidan.

ABSTRACT

PARISTI, L.M., 2019, THE EFFECT OF THE CHARGE OF *GELLING AGENT* AND *ENHANCERS* ON THE DIFFUSION PROFILE AND ANTIOXIDANT ACTIVITY OF RESVERATROL NANOEMULGEL.

Resveratrol (3, 5, 4'-trihydroxystilbene) is a polyphenol compound that has antioxidant activity but is insoluble in water (0.05 mg/mL), so that it is made of nanoemulgel preparations that can increase the solubility of resveratrol. The study aims to obtain a nanoemulsion formula to be incorporated into the gelling agent (Nanoemulgel), knowing the effects of payload gelling agent and enhancers against diffusion profiles and the antioxidant activity of resveratrol Nanoemulgel.

The Formula of Nanoemulsion is based on oil screening, surfactant, and Cosurfactant and is made by self-emulsification method. The Nanoemulsion Formula is selected based on the Transmittan percent value, drug loading, particle size and zeta potential. The selected Formula will be accredited with gelling agent Chitosan or Carbopol and addition of Transcutol CG enhancers so that the Nanoemulgel is formed. Nanoemulgel characterizes viscosity, diffusion profile, freeze thaw and analysed its antioxidant activities. Data obtained further processed with the Design Expert version 7.1.5 to know the effect of payload gelling agent and enhancers.

The results of screening nanoemulsion components obtained Capryol as oil, Kollipor EL as surfactant, and PEG 400 as a cosurfactant with oil ratio: surfactant 4:6 and surfactant: cosurfactant 2:1 concentration 2%. The Formula of Nanoemulsion produces, a percent value of transmittan 76-89,8%, drug loading 105, 42 mg/mL, particle size $38.48 \pm 0, 35$ nm, and Zeta potential-8.3675 mV. The viscosity of the Carbopol Nanoemulgel decreased after the 6-cycle freeze thaw test. The content of positive gelling agents (Chitosan) has a dominant effect on the cumulative response, flux, and total AUC of the enhancers. Interactions between gelling agent and enhancer can increase the antioxidant inhibition change response.

Keywords: Resveratrol, nanoemulgel, charged gelling agent, diffusion, antioxidant activity.