PENGARUH PERBEDAAN PERBANDINGAN KOSNSENTRASI SURFAKTAN DAN KOSURFAKTAN 45:5, 40:10, 35:15 TERHADAP STABILITAS FISIK *SELF-NANOEMULSIFYING DRUG DELIVERY SYSTEMS* (SNEDDS) ATENOLOL DENGAN FASE MINYAK ZAITUN (*OLIVE OIL*)

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ABSTRAK

Skripsi ini membahas tentang bagaimana cara meningkatkan kelarutan serta bioavailabilitas atenolol di dalam tubuh dengan memperkecil ukuran partikel atenolol menjadi bentuk nano (SNEDDS). Pada penelitian ini dibuat SNEDDS atenolol dengan tiga formula yang berbeda, masing-masing dengan jumlah bahan aktif (2%) dan minyak (49%) yang sama, namun dengan kosentrasi surfaktan dan kosurfaktan yang berbeda-beda, yaitu formula satu dengan perbandingan 45:5, formula dua dengan perbandingan 40:10, serta formula tiga dengan perbandingan 35:15. Kemudian, ketiga formula tersebut akan dievaluasi karakteristik fisiknya yang meliputi pengamatan organoleptis, ukuran partikel, % transmisi, *polydispersity index*, zeta potensial, *robustness to dilution* serta viskositas. Kemudian dilanjutkan dengan dilakukan uji stabilitas fisik SNEDDS dengan cara sentrifugasi dan siklus *heating/cooling*. Berdasarkan penelitian ini didapatkan hasil bahwa perbedaan konsentrasi surfaktan dan kosurfaktan tidak berpengaruh terhadap karakteristik fisik SNEDDS yang terbentuk, serta SNEDDS yang tidak stabil akibat atenolol yang tidak larut ke dalam pembawa SNEDDS (konsentrasi surfaktan dan kosurfaktan belum cukup kuat untuk meingkatkan kelarutan atenolol).

Kata kunci: Atenolol, bioavailabilitas, nanopartikel, SNEDDS.

THE INFLUENCE OF DIFFERENCES IN COMPARISON OF 45:5, 40:10, 35:15 SURFACTANT AND CO-SURFACTANT CONCENTRATION TO THE PHYSICAL STABILITY OF THE ATENOLOL SELF-NANOEMULSIFYING DRUG DELIVERY SYSTEMS (SNEDDS) USING OLIVE OIL AS THE OIL PHASE

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ABSTRACT

This thesis is going to discuss about how to increase the solubility and bioavailability of Atenolol by reducing the particle size of Atenolol to form a nanoparticle (SNEDDS). In this thesis, the Atenolol SNEDDS were made into three different formulas, which have the same amount of active pharmaceutical ingredient (2%) and oil (49%) although the amount of surfactant and co-surfactant were all different, which were 45:5 for formula number one, 40:10 for formula number two, and 35:15 for formula number three. Furthermore, each of the three formulas were evaluated for its physical characteristics that include organoleptic observation, particle size, percent transmission, polydispersity index, zeta potential, robustness to dilution and viscosity. Soon after, the process were continued to the physical stability testing, using centrifugation method and heating/cooling cycle. The results that obtained from this thesis are that the differences in the concentration of surfactant and co-surfactant do not influence any of the physical characteristics of the SNEDDS, and the SNEDDS that's been formed are physically unstable because the Atenolol doesn't fully dissolved in the SNEEDS carrier (the surfactant and co-surfactant concentration aren't strong enough to increase the solubility of Atenolol).

Keywords: Atenolol, bioavailability, nanoparticle, SNEDDS.