

Preparation of self-nanoemulsifying drug delivery systems containing simvastatin

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Summary: *The aim of this study was to prepare self-nanoemulsifying drug delivery systems (SNEDDS) containing simvastatin (SIM). After screening steps including solubility study and phase diagram construction, the selected oil, surfactant and cosurfactant of SNEDDS were capryol 90, cremophor RH 40 and carbitol, respectively. The SNEDDS was prepared by consecutively dissolving SIM in capryol 90 and a mixture of cremophor: carbitol (Smix). The effect of different amount of drug and different ratios of capryol: Smix on oil phase droplet size and size distribution (PDI) in water was evaluated. The stability test of several SNEDDS formulation in three conditions: 2-5°C, ambient condition, and accelerated condition (40°C ± 2°C, RH 75% ± 5%) within 4 weeks was used to find out the optimal SNEDDS. The obtained results showed that the droplet size, PDI and drug concentration of optimal SNEDDS were 27.46 nm, 0.14 and 5.81%, respectively. When using optimal SNEDDS, the solubility of simvastatin was improved about 4.17 times compared to the solubility of free drug.*