

ABSTRACT

**THE INFLUENCE OF DIFFERENT TYPES OF COSURFACTANTS
(POLOXAMER 188, LECITHIN, PROPYLENE GLYCOL)
ON SLN-CoQ₁₀ CHARACTERISTICS**

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Coenzyme Q₁₀ (CoQ₁₀) is an unstable chemical compound, especially to light, so it is easily to degrade. Therefore, a delivery system that can improve the stability of the CoQ₁₀ is required. Solid lipid nanoparticles (SLN) is known to protect environment-sensitive molecules, and has controlled release characteristic. Characteristic of SLN can be seen from particle size and drug entrapment efficiency. The aim of this study was to determine the influence of different types of cosurfactants on SLN-CoQ₁₀ characteristics. SLN-CoQ₁₀ was prepared using high shear homogenization method at 24000 rpm for 2 minutes and 15000 rpm for a minute (4 cycle). There were four formulas of SLN-CoQ₁₀ that were formulated with propylene glycol (A1), poloxamer 188 (B1), lecithin (C1) as cosurfactant and comparison without cosurfactant (D1). The particle size observation results of SLN-CoQ₁₀ in formula A1, B1, C1, and D1 were respectively 556.1; 174.1; 220.4; and 556.8 nm. The smallest particle size was produced by the SLN-CoQ₁₀ with poloxamer 188 (B1) as cosurfactant. While the percentage of SLN-CoQ₁₀ entrapment efficiency in formula A1, B1, C1, and D1 were 32.47; 77.38; 19.77; and 16.09%. The greatest entrapment efficiency was produced by the SLN-CoQ₁₀ with poloxamer 188 (B1) as cosurfactant. Based on the evaluation of SLN characteristics, the SLN-CoQ₁₀ preparation with poloxamer 188 as cosurfactant could be concluded to have the best characteristics because it had small particle size and large percentage of entrapment efficiency compared to SLN-CoQ₁₀ with propylene glycol, lecithin as cosurfactant and without cosurfactant.

Keyword (s): Solid lipid nanoparticles, coenzyme Q₁₀, cosurfactant, particle size, entrapment efficiency