

ABSTRACT

Effect of Peppermint Essential Oil on the Characteristics and Physical Stability (RT $20 \pm 1^\circ\text{C}$, RH 65%) of the Ubiquinone Nanostructured Lipid Carriers System

Ermawati Dwi Agustin

Nanostructured Lipid Carriers (NLC) is a colloidal nanoparticle dispersion system resulting from a combination of Nanoemulsion (NE) systems consisting of liquid lipids and Solid Lipid Nanoparticles (SLN) which are composed of solid lipids. The NLC system functions as an Ubiquinone delivery system, also called Coenzyme Q10 (Co-Q10), which is used as an antioxidant and antiaging with low solubility and permeability, so an NLC system is needed to deliver to the target site. The addition of Peppermint Essential Oil (PEO) as an enhancer is also done to further increase the penetration of Ubiquinone. Adding PEO to the formula will increase the amount of liquid lipid in the system which can affect the characteristics and physical stability system. The purpose of this study was to determine the effect of increasing the concentration of PEO (0%; 1.0%; 1.5%; 2.0%) on the characteristics and physical stability of the NLC-Ubiquinone system and to determine the optimal formula. Evaluation of system characteristics includes organoleptic (color, odor, and consistency), pH, particle size and PI, and also zeta potential. The results of the physical stability test of the system that measured based on parameters includes organoleptic (color, consistency, and phase separation), particle size and PI, and pH show that F3 with a PEO concentration of 1.5% is the optimal formula because it was the most stable for 30 days' storage at room temperature (RT) $20 \pm 1^\circ\text{C}$ and room humidity (RH) 65%.

Keywords: Nanostructured Lipid Carriers, Peppermint Essential Oil, Ubiquinone, Characteristics, Physical Stability