

ABSTRACT

The effect of Peppermint Oil Addition on The Characteristics and Physical Stability of CoQ10 loaded-Nanolipid Structured Carrier evaluated with Centrifugation Assay method

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CoQ10 is an antioxidant that has low solubility in water so it has a low drug levels in the skin. Nanostructured lipid carrier (NLC) can be used to improve skin penetration; however, NLC has less penetration rate than nanoemulsion (NE). To improve the penetration of NLC, Peppermint Essential Oil (PEO) was used as an enhancer. This study aimed to evaluate the effect of PEO addition at concentrations of 1%; 1.5%; 2% on the characteristics and physical stability of NLC loaded CoQ10. The NLC composed of oleum cacao and beeswax at a ratio of 75: 25, respectively, virgin coconut oil (VCO), Tween 80, Span 80, and propylene glycol. The NLC was prepared by High Shear Homogenization method. Then, the characteristics included organoleptic, pH, particle size, polydispersity index, and zeta potential were determined. Moreover, the physical stability was evaluated by the centrifugation method. The results showed that all samples had a yellowish color with a specific peppermint oil smell. NLC-CoQ10 with the addition of PEO at a concentration of 2% had less viscosity than other formulas. Increasing the concentration of PEO had no significant effects on the color, pH, particle size, and polydispersity index. On the other hand, it decreased the consistency and increased the zeta potential; however, it still produced good physical stability visually observed during the study.

Keywords: Nanostructured Lipid Carrier, CoQ10, Peppermint Essential oil, Characteristics, Physical stability