

ABSTRACT

EFFECT OF PALMITIC ACID CONCENTRATION ON ZETA POTENTIAL STABILITY OF NANOSTRUCTURED LIPID CARRIERS (NLC) COENZYME Q10

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Coenzyme Q10 is a natural compound found in the inner membrane of mitochondria, with a role as an ATP generator, namely as an electron carrier in the respiratory cycle in mitochondria (4). Coenzyme Q10 is unstable and easily degraded when exposed to light, so it is necessary to choose a delivery system that can improve the stability of coenzyme Q10

Nanostructured Lipid Carrier (NLC) is a method to increase drug penetration through the stratum corneum because it has several advantages. One of the advantages is that the presence of solid lipids in the system can control drug release. The NLC (Nanostructured Lipid Carrier) preparation that is formed needs to be tested for stability to ensure that the dosage formed has good specifications, one of the tests includes testing the zeta potential value

Zeta Potential testing is a test method for assessing the stability of colloidal dispersions, by reflecting the electrical charge on the surface of the particles. Particles that have a zeta potential value more negative than -30 mV or more positive than +30 mV in the nanoparticle system indicate mutual repulsion. Zeta potential always produces a greater zeta potential value due to differences in concentration, where the higher the concentration of palmitic acid, the greater the zeta potential value obtained. However, if we compare the potential zeta value before and after Freeze Thaw stability, the potential zeta value obtained after Freeze Thaw has decreased, where the results after Freeze Thaw are smaller than the potential zeta value before Freeze Thaw. The results of the zeta potential value research show the average value of FI before ($30.51 \pm 0,594$) after ($29.12 \pm 0,269$), FII before ($34.04 \pm 0,113$) after ($30.87 \pm 0,332$), and FIII before ($36.08 \pm 0,862$) After ($33.07 \pm 0,969$).

Results of zeta potential stability test of Nanostructured Lipid Carriers (NLC) Coenzyme Q10 with palmitic acid concentration FI (2.5%) FII (3.5%) FIII (4.5%) in table 4.2 data obtained zeta potential value using t-test obtained a value (sig) < 0.05 which shows that there is an influence between the independent variable and the dependent variable.

Keywords : *Nanostructured lipid carries, palmitic acid, zeta potential*