FORMULASI DAN KARAKTERISASI FISIKA
NANOSTRUCTURED LIPID CARRIER COENZYME Q10
MENGGUNAKAN SETIL PALMITAT DAN *VIRGIN COCONUT OIL* (VCO)
PERBANDINGAN 70:30, 80:20 DAN 90:10
DENGAN METODE *HIGH SHEAR HOMOGENIZATION* DAN *ULTRASOUND*

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ABSTRAK

Coenzyme Q10 merupakan antioksidan yang berguna sebagai antiaging dengan cara mengurangi aktivitas *Reactive Oxygen Species* (ROS) akibat paparan sinar uv. Namun, pada sediaan topikal *Coenzyme Q10* memiliki kelarutan dalam air sangat rendah (log P>10) sehingga penetrasi ke sel target terhalang di *Stratum Corneum*. *Nanostructured Lipid Carrier* (NLC) merupakan suatu sistem dengan ukuran partikel berbentuk nano yang dapat membawa *Coenzyme Q10* berpenetrasi ke epidermis hidup. Pembuatan NLC menggunakan lipid padat setil palmitat dan lipid cair *Virgin Coconut Oil* (VCO) dengan metode *High Shear Homogenization* dan *Ultrasound*. Parameter yang dilihat organoleptis, ukuran partikel, zeta potensial, titik leleh dan viskositas. Formula terbaik yaitu pada perbandingan lipid 70:30 dan 80:20 didapat ukuran partikel yang lebih kecil yaitu 238,8 nm dan 249,5 nm dengan nilai *Polydispersity Index* 0,322 dan 0,315. Dengan penambahan metode *Ultrasound*, ukuran partikel yang didapat lebih kecil dan lebih stabil.

Kata kunci: NLC, Setil Palmitat, *Virgin Coconut Oil* (VCO)

FORMULATION AND CHARACTERIZATION OF PHYSICS OF NANOSTRUCTURED LIPID CARRIER COENZYME Q10 USING CETYL PALMITATE AND VIRGIN COCONUT OIL (VCO) WITH COMPARISON 70:30, 80:20 AND 90:10 WITH HIGH SHEAR HOMOGENIZATIONAND ULTRASOUND METHODS

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ABSTRACT

Coenzyme Q10 is an antioxidant that is useful as an anti-aging by reducing Reactive Oxygen Species (ROS) activity due to exposure to UV light. However, in topical preparations Coenzyme Q10, it has very low solubility in water (log P> 10) so that penetration to the target cell is obstructed on the Stratum Corneum. Nanostructured Lipid Carrier (NLC) is a system with the size of nano-shaped particles that can carry out Coenzyme Q10 to penetrate the living epidermis. The production of NLC uses solid lipid cetyl palmitate and liquid lipid of Virgin Coconut Oil (VCO) with High Shear Homogenization and Ultrasound methods. The parameters that are examined are organoleptic, particle size, potential zeta, melting point, and viscosity. The best formula, which is at the lipid ratio of 70:30 and 80:20, it is obtained a smaller particle size of 238.8 nm and 249.5 nm with the value of Polydispersity Index 0.322 and 0.315. With the addition of the Ultrasound method, the particle size obtained is smaller and more stable.

Keywords: NLC, Cetyl Palmitate, Virgin Coconut Oil (VCO)