

**PENGEMBANGAN FORMULASI DAN KARAKTERISASI
NANOSTRUCTURED LIPID CARRIERS (NLC) KURKUMIN
MENGUNAKAN *PEG-8 BEESWAX, CAPRIC TRIGLYCERIDE, DAN
PEG-40 HYDROGENATED CASTOR OIL***

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ABSTRAK

Penyembuhan luka adalah salah satu proses fisiologis paling kompleks yang melibatkan banyak sel, proses dan jangka waktu pemulihan tergantung pada kelompok usia, tingkat infeksi, dan penyakit penyerta. Dalam tahapan penyembuhan luka, kurkumin berkontribusi dalam mempercepat fase inflamasi, meningkatkan densitas kolagen dalam jaringan, dan juga meningkatkan proses proliferasi dari jaringan fibroblas. Dengan demikian, kurkumin dapat mendukung secara positif proses penyembuhan luka. NLC adalah sistem penghantaran obat terbaru yang mengubah ukuran partikel ke skala nano dari 10 - 1000 nm. Metode yang digunakan adalah dengan mencampurkan *PEG-8 Beeswax, capric triglyceride, PEG-40 Hydrogenated Castor Oil* dan kurkumin menggunakan sonikator probe dengan suhu, durasi dan amplitudo yang sesuai. Serta dilakukan karakterisasi yang meliputi ukuran partikel, Pdi, zeta potensial, efisiensi penyerapan dan Morfologi. Ukuran partikel NLC kurkumin berkisar antara 108 - 140nm. Nilai PDI NLC kurkumin 0,4-0,3. Nilai Zeta Potensial NLC kurkumin memiliki nilai (-15)mV – (-26)mV. NLC kurkumin memiliki nilai %EE 99%-100%. morfologi partikel NLC Kurkumin diuji menggunakan mikroskop elektron transmisi (TEM) menunjukkan NLC Kurkumin memiliki bentuk partikel bulat (sferis) pada perbesaran 12.000x. Kurkumin dapat diformulasikan menjadi NLC dengan menggunakan *PEG-8 Beeswax, capric triglyceride, PEG-40 Hydrogenated Castor*. Kelima formula NLC Kurkumin dapat menghasilkan karakterisasi yang baik dan memenuhi syarat sesuai literatur.

KATA KUNCI : NLC, Kurkumin, *PEG-8 Beeswax, capric triglyceride, PEG-40 Hydrogenated Castor*

**DEVELOPMENT OF FORMULATION AND CHARACTERIZATION OF
NANOSTRUCTURED LIPID CARRIERS (NLC) CURCUMIN USING PEG-8
BEESWAX, CAPRIC TRIGLYCERIDE, AND PEG-40 HYDROGENATED
CASTOR OIL**

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ABSTRACT

Wound healing is one of the most complex physiological processes involving many cells, the process and duration of recovery depend on age group, level of infection, and comorbidities. In the wound healing stage, curcumin contributes to accelerating the inflammatory phase, increasing collagen density in tissue, and also increasing the proliferation process of fibroblast tissue. Thus, curcumin can positively support the wound healing process. NLC is the latest drug delivery system that changes particle size to the nanoscale from 10 - 1000 nm. The method used is to mix PEG-8 Beeswax, capric triglyceride, PEG-40 Hydrogenated Castor Oil and curcumin using a probe sonicator with the appropriate temperature, duration and amplitude. And characterization is carried out including particle size, Pdi, zeta potential, entrapment efficiency and morphology. The particle size of NLC curcumin ranges from 108 - 140nm. The Pdi value of NLC curcumin is 0.4-0.3. The Zeta Potential value of NLC curcumin has a value of (-15) mV – (-26) mV. NLC curcumin has a %EE value of 99%-100%. The morphology of NLC Curcumin particles was tested using a transmission electron microscope (TEM) showing that NLC Curcumin has a spherical particle shape at a magnification of 12,000x. Curcumin can be formulated into NLC using PEG-8 Beeswax, capric triglyceride, PEG-40 Hydrogenated Castor. The five NLC Curcumin formulas can produce good characterization and meet the requirements according to the literature.

KEYWORDS : NLC, Curcumin, PEG-8 Beeswax, capric triglyceride, PEG-40 Hydrogenated Castor