

Thesis Title	Development of Topical Film Forming Spray Containing <i>Garcinia Cowa</i> Leaf Extract Nanoemulsion for Pharmaceutical and Cosmeceutical Products
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ABSTRACT

The aim of this study was to fabricate and characterize topical film forming spray containing *Garcinia cowa* leaf extract (GC) nanoemulsion for use as pharmaceutical and cosmeceutical products. The GC nanoemulsion was first prepared by ultrasonic method. Properties of the GC nanoemulsion, including morphology, particle size, polydispersity index (PDI), zeta potential, thermal properties, and stability were investigated. In addition, encapsulation efficiency (%EE), release study, antibacterial activity, antioxidant activity, anti-inflammatory activity, and indirect cytotoxicity were investigated. The results showed that the particle size of GC nanoemulsion ranged between 66 and 71 nm, PDI ranged between 0.17 and 0.28, and zeta potential ranged between -17 and -10 mV. The cumulative released amount of GC nanoemulsion ranged between 14 and 31%. In addition, the GC nanoemulsion exhibited the inhibition against both gram-negative and gram-positive bacteria and showed good antioxidant activity. The GC nanoemulsion was also non-toxic to NCTC clone 929 cells. Thus, the GC nanoemulsion could incorporate into the topical film forming spray for use as pharmaceutical and cosmeceutical products.

The topical film forming spray was prepared using Eudragit E100 (EuE100) as polymeric system, dibutyl phthalate (DBP) as plasticizer, GC nanoemulsion as drug, polyvinyl pyrrolidone (PVP) as binder and enhancer, and ethanol as solvent. From the results, the increase of EuE100 concentration caused the viscosity to increase but the spray pattern to decrease. All formulations (S1-S6) showed the evaporation time in the range of 3.27-7.10 min and the contact angle was low, in the range of 19.05-30.04°. Finally, the topical film forming film containing GC nanoemulsion showed good antibacterial, anti-inflammatory, and non-toxic to the cells. Thus, this topical film forming spray containing GC nanoemulsion have the potential for use as pharmaceutical and cosmeceutical products.

Keywords: *Garcinia cowa* Leaf Extract, Nanoemulsion, Topical Film Forming Spray, Pharmaceutical and Cosmeceutical Products

