

ABSTRACT

**CHARACTERIZATION AND SOLUBILITY TEST OF *p*-
METHOXYCINNAMIC ACID IN
O/W NANOEMULSION SYSTEM USING VCO**

**(O/W Nanoemulsion with Ratio Use of Surfactant
Span 80 – Tween 80 : Cosurfactant Ethanol 96 % = 6 : 1)**

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The aim of this study was to make comparison of characteristic of *p*-methoxycinnamic acid from nanoemulsion vehicles containing VCO as oil phase, nonionic surfactants (Span 80 and Tween 80), ethanol 96 % as co-surfactant, and acetic buffer solution pH 4.2. The optimum combination of surfactant : co-surfactant (S:CoS) were 6:1. Three nanoemulsion formulas were made based on three different ratios of oil and water phase (1:20, 1:25, and 1:27,5). Their physicochemical properties were examined for the organoleptics, conductivity, droplets measurement, and polydispersity index, also the soluble capacity of *p*-methoxycinnamic acid. According to organoleptic evaluation, all formulas has clear yellow color and less viscous consistency. The conductivity results showed that nanoemulsion was oil in water (o/w) type. The size measurement evaluation showed that *p*-methoxycinnamic acid – loaded nanoemulsions have bigger size (62,63 – 196,13 nm) than unloaded formulas (23,70 – 96,60 nm). Polydispersity index of systems (with or without *p*-methoxycinnamic acid) were 0,5 – 0,8. In solubility test, formula 1 : 20 has the highest soluble capacity (0,37 %). Based on analysis of varians (ANOVA) test, the soluble capacity of formula 1:25 and formula 1:27,5 don't have a significant differentiation. But, formula 1:20 have significant differentiation from the others. From the solubility test, formula 1:20 (soluble capacity 0,37 %) was shown as the best formula than two others formula.