

ABSTRACT

**THE EFFECT OF RATIO OF D- α -TOCOPHERYL
POLYETHYLENE GLYCOL 1000 SUCCINATE AND POLOXAMER
P84 ON PHYSICAL CHARACTERISTIC AND STABILITY
OF MIXED MICELLES
(for Delivery System of Hesperetin)**

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Hesperetin is a flavonoid compound of citrus fruit that has a wide pharmacological effects. Nevertheless, its poor solubility in water limits its use as a therapeutic molecule. Mixed micelles were developed to increase the solubility of hesperetin. Mixed micelle from combination of D- α -tocopheryl polyethylene glycol 1000 succinate (TPGS) and poloxamer P84 (P84) are known to have synergism effect to improve quality of micelle. This study was aimed to investigate the effect of different ratios TPGS:P84 on physical characteristic and stability of mixed micelle. The mixed micelles were prepared by thin film hydration method. Dynamic light scattering method showed that particle size of mixed micelle TPGS : P84 ratio 1 : 4 was bigger than the ratio 1:1 and 1:2. In general, particle size of mixed micelles were smaller compared to TPGS-only micelle. CMC value of mixed micelles TPGS:P84 was lower than CMC of TPGS and P84 only. Mixed micelles also exhibited greater encapsulation efficiency than TPGS-only micelle. The lowest CMC and the highest encapsulation efficiency was obtained in mixed micelles TPGS:P84 with ratio 1:4. Stability test by diluting micelle using phosphate buffer showed no precipitation of the mixed micelles. The physical stability of micelles under storage condition was observed at 25°C for 7 days. TPGS-only micelle showed precipitation after 3 days storage but mixed micelles showed no precipitation. In conclusion, increasing amount of poloxamer P84 in mixed micelles could form bigger particle size, lower CMC, greater encapsulation efficiency and better stability.

Keywords: Mixed micelles, TPGS, poloxamer P84, hesperetin, physical characteristic, stability