

PERBEDAAN PROFIL DISOLUSI KURKUMIN DALAM DISPERSI PADAT EKSTRAK KUNYIT (*Curcuma longa* L.) DENGAN VARIASI RASIO POLOXAMER 407/MALTODEKSTRIN

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ABSTRAK

Kurkumin merupakan salah satu komponen dari tanaman kunyit (*Curcuma longa* L.) yang telah menunjukkan berbagai potensi farmakologis. Namun, kurkumin termasuk obat BCS kelas II karena memiliki kelarutan yang rendah di dalam air (≈ 11 ng/mL) sehingga disolusi merupakan *rate limiting step* dalam proses absorpsi kurkumin.

Dispersi padat merupakan upaya peningkatan disolusi obat hidrofobik. Pada penelitian ini, dispersi padat dibuat dengan metode *solvent evaporation* dengan *spray drying*. Dispersi padat dibuat dengan kandungan ekstrak kunyit sebanyak 30% (b/b) dengan variasi rasio Poloxamer 407/maltodekstrin yaitu 1:9, 1:4, dan 1:2,3 untuk melihat perbedaan profil disolusi kurkumin antar rasio. Pengukuran sampel dilakukan dengan spektrofotometri visibel.

Dari hasil verifikasi metode analisis, metode terbukti akurat dan presisi serta memiliki linearitas yang baik (nilai r sebesar 0,9969). Variasi rasio Poloxamer 407/maltodekstrin (1:9, 1:4 dan 1:2,3) pada dispersi padat ekstrak kunyit terbukti memberikan perbedaan signifikan terhadap kelarutan serta disolusi kurkumin dibandingkan dengan campuran fisik (p -value $<0,05$). Pada uji disolusi, terdapat perbedaan signifikan nilai *Dissolution Efficiency* menit ke-180 (DE_{180}) dispersi padat antar rasio Poloxamer 407/maltodekstrin (1:9, 1:4 dan 1:2,3) (p -value $<0,05$). Semakin besar rasio Poloxamer 407/maltodekstrin pada sistem dispersi padat ekstrak kunyit maka disolusi kurkumin akan semakin meningkat.

Kata kunci: kurkumin, disolusi, dispersi padat, Poloxamer 407, maltodekstrin

THE DIFFERENCES OF CURCUMIN DISSOLUTION PROFILE IN TUMERIC EXTRACT (*Curcuma longa* L.) SOLID DISPERSION SYSTEM WITH VARIANCES OF POLOXAMER 407/MALTODEXTRIN RATIOS

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ABSTRACT

Curcumin is one component of tumeric (*Curcuma longa* L.) that has been shown to have pharmacological potentials. However, curcumin is classified as BCS class II because it has a low water solubility (≈ 11 ng/mL) therefore dissolution is rate limiting step to enhance oral absorption of curcumin.

Solid dispersion is way to improve dissolution of hydrophobic drug. In this study, solid dispersion were prepared by solvent evaporation method with spray drying. Solid dispersions were made of 30% (b/b) of tumeric extract with variances ratios of Poloxamer 407/maltodextrin 1:9, 1:4, and 1:2,3 to see the differences of curcumin dissolution among ratios. Curcumin content measurement was performed by spectrophotometric visible.

From the result of analysis method verification, method was proved to be accurate and precise along with good linearity (r value=0,9969). The variances of Poloxamer 407/maltodextrin ratios (1:9, 1:4 and 1:2,3) in tumeric extract solid dispersions (SDs) were proved significantly different in solubility and dissolution of curcumin compared with the physical mixtures (PMs) (p-value<0,05). In dissolution test, there were significantly different in Dissolution Efficiency at minute-180 (DE₁₈₀) among Poloxamer 407/maltodextrin ratios (1:9, 1:4 and 1:2,3) (p-value<0,05). The greater Poloxamer 407/maltodextrin ratios in tumeric extract solid dispersion system, dissolution of curcumin will be more increase.

Key word: curcumin, dissolution, solid dispersion, Poloxamer 407, maltodextrin