

ABSTRAK

Kunyit (*Curcuma longa* L.) merupakan tanaman herba perenial dan memiliki rhizoma yang termasuk dalam famili *Zingiberaceae*. Kunyit mengandung polifenol bioaktif yang dikenal dengan kurkuminoid. Berdasarkan *Biopharmaceutical Class System* kurkumin tergolong dalam kelas II dimana memiliki kelarutan rendah dalam air, tetapi memiliki permeabilitas tinggi. Kelarutan kurkumin dalam air (pH 5,0) hanya berkisar 11 ng/ml. Oleh karena itu dibutuhkan upaya untuk meningkatkan kelarutan dari kurkumin untuk meningkatkan laju disolusinya. Penelitian ini bertujuan untuk mengetahui pengaruh rasio pembawa maltodekstrin DE 18:tween 80 terhadap laju disolusi ekstrak kunyit (*Curcuma longa* L.) dalam formulasi dispersi padat. *Drug load* yang digunakan pada formula dispersi padat ekstrak kunyit sebesar 30% dengan rasio pembawa maltodekstrin DE 18:tween 80 sebesar 1:0; 1:0,7; 1:0,17; 1:0,4. Pembuatan dispersi padat dilakukan dengan metode *solvent evaporation* menggunakan *spray dryer*. Profil disolusi kurkumin dalam dispersi padat dianalisis berdasarkan *Dissolution Efficiency* kurkumin selama 120 menit (DE_{120}) yang dianalisis dengan spektrofotometer UV-Vis. Hasil DE_{120} untuk DP1; DP 2; DP 3; DP 4; secara berturut-turut sebesar 8,31%; 10,59%; 10,45%; 10,71%. Formula 4 dispersi padat dengan rasio maltodekstrin DE 18:tween 80 (1:0,4) menjadi formula dengan peningkatan laju tertinggi yaitu $10,71\% \pm 0,29$ jika dibandingkan terhadap dispersi padat formula 1 terjadi peningkatan sebesar 1,28 kali. Dapat disimpulkan bahwa dispersi padat ekstrak kunyit dengan variasi rasio maltodekstrin DE 18:tween 80 terbukti meningkatkan laju disolusi ($p < 0,05$).

Kata kunci Ekstrak kunyit, dispersi padat, maltodekstrin DE 18, tween 80, dan *spray drying*.

ABSTRACT

Turmeric (Curcuma longa L.) is a perennial herbaceous plant and has rhizomes that are included in the Zingiberaceae family. Turmeric contains bioactive polyphenols known as curcuminoids. Based on the Biopharmaceutical Class System, curcumin is classified as class II which has low solubility in water, but has high permeability. The solubility of curcumin in water (pH 5.0) is only around 11 ng/ml. Therefore, efforts are needed to increase the solubility of curcumin to increase its dissolution rate. This study aims to determine the effect of the ratio of maltodextrin DE 18:tween 80 carrier on the dissolution rate of turmeric extract (Curcuma longa L.) in solid dispersion formulations. The drug load used in the solid dispersion formula of turmeric extract is 30% with a ratio of maltodextrin DE 18:tween 80 carrier of 1:0; 1:0.7; 1:0.17; 1:0.4. The solid dispersion was prepared using the solvent evaporation method using a spray dryer. The dissolution profile of curcumin in the solid dispersion was analyzed based on the Dissolution Efficiency of curcumin for 120 minutes (DE120) analyzed with a UV-Vis spectrophotometer. The DE120 results for DP1; DP 2; DP 3; DP 4 were 8.31%; 10.59%; 10.45%; 10.71%, respectively. Formula 4 solid dispersion with a maltodextrin ratio of DE 18:tween 80 (1:0.4) became the formula with the highest rate increase of 10.71%±0.29 when compared to the solid dispersion of formula 1, which experienced a 1.28-fold increase. It can be concluded that the solid dispersion of turmeric extract with variations in the maltodextrin ratio of DE 18:tween 80 is proven to increase the dissolution rate ($p < 0.05$).

Keywords: *Turmeric extract, solid dispersion, maltodextrin DE 18, tween 80, and spray drying.*