

PENGARUH FORMULASI EKSTRAK KUNYIT DALAM SISTEM DISPERSI PADAT MALTODEKSTRIN TERHADAP DISOLUSI KURKUMIN

ABSTRAK

Kurkumin berpotensi untuk mencegah dan mengobati berbagai macam penyakit. Namun, kurkumin memiliki bioavailabilitas yang rendah karena kelarutan dan disolusinya yang rendah dalam air. Sistem dispersi padat (DP) maltodekstrin merupakan salah satu cara untuk meningkatkan bioavailabilitas dari kurkumin. Tujuan penelitian adalah mengetahui pengaruh sistem DP ekstrak kunyit-maltodekstrin dan proporsi kadar ekstrak kunyit di dalamnya terhadap disolusi kurkumin.

Dispersi padat dibuat menjadi tiga serial *drug load* menggunakan metode *spray drying*. Uji disolusi menggunakan alat uji disolusi tipe dayung. Kadar kurkumin terdisolusi dianalisis dengan metode kromatografi lapis tipis (KLT) densitometri. Hasil disolusi dihitung disolusi efisiensinya dan dianalisis menggunakan program *real statistic* dari Microsoft Excel dengan taraf kepercayaan 95%.

Hasil penelitian menunjukkan *drug load* dispersi padat ekstrak kunyit-maltodekstrin yang didapatkan (2,62%, 6,41%, 10,85%) lebih rendah dari yang diinginkan (10%, 20%, 30%). Dispersi padat mampu meningkatkan disolusi kurkumin dibandingkan dengan disolusinya dalam campuran fisik pada *drug load* 2,62%. Namun pada *drug load* lebih dari 2,62%, sistem DP maltodekstrin tidak mampu meningkatkan disolusi kurkumin. Hasil penelitian juga menunjukkan profil disolusi antar *drug load* DP berbeda secara signifikan ($p=0.03$). Semakin meningkatnya kadar ekstrak kunyit dalam sistem DP, maka disolusi kurkumin menjadi semakin lambat.

Kata kunci: Disolusi, Dispersi padat, Kurkumin, Maltodekstrin

ABSTRACT

Curcumin is a potential compound to prevent and cure various human diseases. However, curcumin has poor bioavailability due to poor water solubility and low dissolution rate. Maltodextrin-based solid dispersion (SD) is one of the methods to improve the bioavailability of curcumin. The study aims to determine the effect of turmeric extract-maltodextrin solid dispersion and the turmeric extract proportion on the curcumin dissolution.

Solid dispersion was made of a variety of drug load by spray drying. The dissolution test was conducted by employing dissolution apparatus paddle method. Dissolved curcumin concentration was examined using thin layer chromatography with densitometry. The dissolution efficiency as the dissolution parameter was analyzed by using Microsoft Excel real statistic with 95% confidence level.

The result showed that the drug load of the SD (2,62%, 6,41%, 10,85%) was lower than expected (10%, 20%, 30%). Solid dispersion could improve curcumin dissolution compared to its physical mixture at 2,62% drug load. However, if the drug load was more than 2,62%, the maltodextrin-based SD could not increase the curcumin dissolution. The result showed that the three solid dispersions' dissolution profile were significantly different ($p=0,03$). The increase of the turmeric extract in solid dispersion system made the curcumin dissolution lower.

Key words: Dissolution, Solid Dispersion, Curcumin, Maltodextrin