

INTISARI

Hidroklorotiazid merupakan obat antihipertensi golongan diuretik yang tersedia dalam bentuk tablet konvensional. Hal ini dapat menimbulkan masalah, terkait efektivitas terapi dan kenyamanan penggunaan pada geriatri. Pembuatan *fast disintegrating tablet* (FDT) hidroklorotiazid diharapkan dapat mengatasi masalah tersebut. Penelitian ini bertujuan untuk memperoleh formula optimum FDT dengan kombinasi *microcrystalline cellulose* (MCC) PH 200 sebagai *filler-binder* dan *croscarmellose sodium* sebagai bahan penghancur.

FDT diformulasikan menggunakan metode *simplex lattice design* dalam lima formula dengan kombinasi *croscarmellose sodium* dan *microcrystalline cellulose* PH 200 yaitu Formula 1 (1%:64%), Formula 2 (3%:62%), Formula 3 (5%:6%), Formula 4 (7%:58%) dan Formula 5 (9:56%). FDT dibuat dengan metode kempa langsung, selanjutnya dilakukan evaluasi terhadap parameter sifat fisik FDT meliputi kekerasan, kerapuhan, rasio absorpsi air, waktu pembasahan, waktu disintegrasi, dan disolusi. Data hasil penelitian dianalisis menggunakan metode *simplex lattice design* dalam *software Design-Expert*[®] 9.0.3.1 untuk memperoleh formula optimum.

Hasil penelitian menunjukkan bahwa kombinasi *croscarmellose sodium* dan MCC PH 200 mempengaruhi sifat fisik FDT hidroklorotiazid. Peningkatan proporsi *croscarmellose sodium* dalam tablet dapat meningkatkan kerapuhan, meningkatkan waktu pembasahan dan waktu disintegrasi. Peningkatan proporsi MCC PH 200 dalam tablet dapat meningkatkan kekerasan dan rasio absorpsi air. Formula optimum FDT diperoleh pada komposisi *croscarmellose sodium* dan MCC PH 200 sebesar 1,64 % dan 63,36 % terhadap bobot tablet.

Kata kunci: hidroklorotiazid, *fast disintegrating tablet*, *microcrystalline cellulose*, *croscarmellose sodium*

ABSTRACT

Hydrochlorothiazide is a thiazide diuretic, which is used in the treatment of hypertension. This drug is available in conventional tablets dosage form in the market, which can cause problems related to the effectiveness and administration convenience by geriatrics. Therefore, fast disintegrating tablets (FDT) is expected to solve this issue. The objective of this study was to obtain the optimum formula of FDT with combination of microcrystalline cellulose (MCC) PH 200 as filler-binder and croscarmellose sodium as superdisintegrant.

FDT were formulated using simplex lattice design in five formulas combination of croscarmellose sodium and MCC PH 200, namely Formula 1 (1%:64%), Formula 2 (3%:62%), Formula 3 (5%:6%), Formula 4 (7%:58%) and Formula 5 (9:56%). FDT were manufactured using direct compression method and evaluated by the physical properties include hardness, friability, water absorption ratio, wetting time, disintegration time, and dissolution. Data were analyzed using simplex lattice design method by software Design-Expert® 9.0.3.1 to obtain the optimum formula.

Results of the study showed that the combination of croscarmellose sodium and MCC PH 200 affect the physical properties of hydrochlorothiazide FDT. Increasing the proportion of croscarmellose sodium in the tablet can increase the friability, wetting time and disintegration time. Increasing the proportion of MCC PH 200 can increase hardness and water absorption ratio. Tablet optimum formula were obtained with the composition of 1,64% croscarmellose sodium and 63,36% MCC PH 200 of the tablet weight.

keywords: hydrochlorothiazide, fast disintegrating tablet, microcrystalline cellulose, croscarmellose sodium