INTISARI

Glimepiride merupakan obat antidiabetes oral dari golongan sulfonilurea yang umum diresepkan. Akan tetapi, bioavailabilitas glimepiride dalam darah rendah karena absorbsinya terganggu oleh waktu pengosongan lambung. Untuk meningkatkan bioavailabilitas, obat dapat diformulasikan dalam sediaan *Floating Drug Delivery System* (FDDs). Penelitian ini bertujuan untuk mengetahui pengaruh komposisi matriks Methocel K100M dan Methocel E6 Premium LV terhadap sifat fisik tablet serta mengetahui formula optimum tablet *floating* glimepiride sistem *effervescent*.

Rancangan formula ditentukan dengan metode desain faktorial menggunakan *software Design Expert* versi 13. Digunakan 2 faktor yaitu Methocel K100M (A) dan Methocel E6 Premium LV (B) dengan 2 level sehingga diperoleh 4 rancangan formula. Tablet dibuat dengan metode kempa langsung. Masing-masing formula kemudian dievaluasi berdasarkan parameter kekerasan, kerapuhan, *swelling index*, *floating lag time*, Q_{120}, Q_{240}, dan Q_{360}. Formula optimum ditentukan dari data yang diperoleh dari *software* berupa suatu persamaan dan grafik yang menggambarkan pola respon yang telah dianalisis secara statistika.

Dari hasil penelitian diperoleh hasil bahwa Methocel K100M dapat memperlambat *floating lag time* dan laju disolusi, sebaliknya dengan Methocel E6 Premium LV. Adapun keduanya dapat meningkatkan kekerasan, meningkatkan *swelling index*, dan menurunkan kerapuhan tablet. Formula optimum diperoleh pada komposisi Methocel K100M sebesar 55 mg dan Methocel E6 Premium LV sebesar 6,88 mg untuk setiap bobot tablet. Hasil pengujian formula optimum dibandingkan dengan nilai prediksi dari *software* menggunakan *one-sample t-test* dengan taraf kepercayaan 95%. Hasil percobaan formula optimal memberikan nilai Sig. (2 *Tailed*) > 0,05 (tidak berbeda signifikan dengan prediksi *software*).

Kata Kunci: *floating, effervescent*, glimepiride, Methocel K100M, Methocel E6 Premium LV

ABSTRACT

Glimepiride is an oral antidiabetic drug from the sulfonylurea group that is commonly prescribed. However, the bioavailability of glimepiride is low because its absorption is disrupted by gastric emptying time. To increase bioavailability, the drug can be formulated in a Floating Drug Delivery System (FDDs). This study aims to determine the effect of the matrix composition of Methocel K100M and Methocel E6 Premium LV on the physical properties of tablets and to determine the optimum formula for floating glimepiride effervescent tablet systems.

The formula design was determined by the factorial design method using Design Expert software version 13. Two factors were used, such as Methocel K100M (A) and Methocel E6 Premium LV (B) with 2 levels to obtain 4 formula designs. Tablets were made by the direct compression method. Each formula was then evaluated based on the parameters of hardness, friability, swelling index, floating lag time, Q_{120}, Q_{240}, and Q_{360}. The optimum formula is determined from the data obtained from the software in the form of an equation and graph that describes the response pattern.

From the results of the study, it was found that Methocel K100M can slow down the floating lag time and dissolution rate, in contrast to Methocel E6 Premium LV. Both can increase hardness, increase swelling index, and reduce tablet fragility. The optimum formula was obtained at the composition of Methocel K100M of 55 mg and Methocel E6 Premium LV of 6.88 mg for each tablet weight. The results of the optimum formula test were compared with the predicted value from the software using a one-sample t-test with a confidence level of 95%. The results of the optimal formula experiment gave a Sig. (2 Tailed) value > 0.05 (not significantly different from the prediction).

Keywords: floating, effervescent, glimepiride, Methocel K100M, Methocel E6 Premium LV