

INTISARI

Glibenklamid merupakan obat antidiabetes yang memiliki kelarutan dalam air yang rendah sehingga perlu dibuat menjadi sediaan yang mampu mengatasi masalah kelarutan tersebut. Tablet likuisolid merupakan salah satu metode untuk meningkatkan kelarutan dan laju disolusi obat. Penelitian ini bertujuan untuk mengetahui optimasi formula tablet likuisolid glibenklamid dengan variasi kadar pelarut *non volatile* PEG 400 dan bahan pembawa Avicel PH 102.

Lima formula dengan kombinasi PEG 400 dan Avicel PH 102 yaitu: *run* 1 (5%:85%), *run* 2 (7,5%:82,5%), *run* 3 (10%:80%), *run* 4 (8,75%:81,25%) dan *run* 5 (6,25%:83,75%) ditentukan oleh perangkat lunak *Design Expert 7.1.5*. Tablet dibuat dengan metode kempa langsung kemudian dilakukan evaluasi meliputi uji kecepatan alir, uji sudut diam, uji kekerasan, uji kerapuhan, uji waktu hancur, uji disolusi dan uji keseragaman bobot. Penetapan formula optimum sediaan tablet likuisolid glibenklamid menggunakan metode *Simplex Lattice Design*. Hasil sifat fisik tablet formula optimum diverifikasi dengan hasil prediksi *software* menggunakan analisis statistik *One sample t-test* dengan taraf kepercayaan 95%.

Hasil penelitian menunjukkan bahwa Avicel PH 102 berpengaruh lebih dominan dalam meningkatkan kecepatan alir, sedangkan PEG 400 berpengaruh lebih dominan dalam meningkatkan kadar obat terdisolusi. Avicel PH 102 dan PEG 400 berpengaruh dalam peningkatan kekerasan tablet, akan tetapi interaksi antara Avicel PH 102 dan PEG 400 menurunkan kekerasan tablet likuisolid glibenklamid. Berdasarkan data hasil percobaan, perbandingan komposisi Avicel PH 102 sebesar 80,28% dan PEG 400 sebesar 9,72% memberikan sifat fisik tablet likuisolid glibenklamid yang optimal.

Kata kunci: optimasi, glibenklamid, Avicel PH 102, PEG 400

ABSTRACT

Glibenclamide is an antidiabetic drug that has low solubility in water that needs to be made into preparations that can overcome the solubility problems. Liquisolid tablet is a method to increase the solubility and dissolution rate of drugs. The aim of this study is to determine the optimum formula of glibenclamide liquisolid tablet with a variation amount of PEG 400 as non volatile solvent and Avicel PH 102 as carrier material.

Five formulas with a combination of PEG 400 and Avicel PH 102, namely: run 1 (5%:85%), run 2 (7.5%:82.5%), run 3 (10%:80%), run 4 (8.75%:81.25%) and run 5 (6.25%:83.75%) were determined by Design Expert 7.1.5 software. Tablets were made by the method of direct compression then be evaluated include the flowability test, angle of repose test, hardness test, friability test, disintegration test, dissolution test and weight uniformity test. Determination of the optimum formula of glibenclamide liquisolid tablet was conducted using Simplex Lattice Design. The results of the physical properties tests of the optimum formula were verified using one sample t-test with a confidence level of 95%.

The results showed that Avicel PH 102 had more dominant influence in increasing the flow rate, while PEG 400 had more dominant influence in increasing levels of dissolved drug. Avicel PH 102 and PEG 400 increased the hardness of tablets, but the interaction between Avicel PH 102 and PEG 400 decreased the tablet hardness. Based on experimental data, the ratio of Avicel PH 102 : PEG 400 at 80.28% : 9.72% gave the optimum physical properties of glibenclamide liquisolid tablet.

Keywords: optimization, glibenclamide, Avicel PH 102, PEG 400