

INTISARI

Nifedipin merupakan salah satu obat yang digunakan dalam pengobatan hipertensi. Sediaan tablet *floating* nifedipin dapat menahan pelepasan zat aktif dan dapat bertahan lebih lama di lambung. Pembuatan tablet *floating* membutuhkan matriks yang dapat menahan pelepasan obat dari sediaan. HPMC memiliki mekanisme membentuk lapisan hidrogel yang kental pada sekeliling sediaan. Natrium alginat merupakan matriks hidrofil dan mampu mengembang. Penelitian ini bertujuan untuk mengetahui formula optimum dan pengaruh kombinasi HPMC dan natrium alginat sebagai matriks tablet *floating* nifedipin terhadap sifat fisik dan profil disolusi tablet.

Delapan formula dibuat dengan metode kempa langsung dengan kombinasi HPMC dan natrium alginat yaitu Formula 1 (60mg:60mg), Formula 2 (75mg:45mg), Formula 3 (45mg:75mg), Formula 4 (60mg:60mg), Formula 5 (30mg:90mg), Formula 6 (90mg:30mg), Formula 7 (30mg:90mg), dan Formula 8 (90mg:30mg). Tablet yang dihasilkan diuji sifat fisiknya meliputi keseragaman bobot, kekerasan, kerapuhan, *floating lag time*, total *floating time*, dan uji disolusi. Data sifat fisik tablet yang diperoleh kemudian diolah menggunakan metode *Simplex Lattice Design* dengan program *Design Expert® 9.0.4.1* untuk mendapat formula optimum.

Hasil penelitian memberikan informasi bahwa peningkatan jumlah HPMC dapat meningkatkan kerapuhan tablet, mempercepat *floating lag time*, dan meningkatkan total *floating time*, sedangkan peningkatan jumlah natrium alginat dapat menurunkan DE_{360} . Berdasarkan pendekatan nilai *desirability* didapatkan formula optimum tablet *floating* nifedipin dengan komposisi 90 mg HPMC dan 30 mg natrium alginat dalam tablet dengan bobot 300 mg.

Kata kunci: Nifedipin, tablet *floating*, HPMC, natrium alginat

ABSTRACT

Nifedipine is one of the drugs used in the treatment of hypertension. Floating tablet of nifedipine can sustain the release of active substances and retain in stomach for a longer period. Manufacture of floating tablet requires matrix that can sustain the drug release from the dosage. HPMC has a mechanism of forming viscous hydrogel layer around the dosage form. Sodium alginate is a hydrophilic matrix and able to expand. This study aims to determine the optimum formula and the effect of the combination of HPMC and sodium alginate as matrix of nifedipine floating tablet on the physical properties and dissolution profiles of tablets.

Eight formulas are made by direct compression method with combination of HPMC and sodium alginate, Formula 1 (60mg: 60mg), Formula 2 (75mg: 45mg), Formula 3 (45mg: 75mg), Formula 4 (60mg: 60mg), Formula 5 (30mg : 90mg), Formula 6 (90mg: 30mg), Formula 7 (30mg: 90mg), and Formula 8 (90mg: 30mg). The physical properties of tablets are tested include weight uniformity, hardness, friability, floating lag time, total floating time, and dissolution test. The data obtained then is processed using Simplex Lattice Design method by Design Expert® 9.0.4.1 program to obtain the optimum formula.

Results of the study provide information that increasing proportion of HPMC can increase friability of tablets, accelerate floating lag time, and increase the total floating time, while the increasing proportion of sodium alginate can reduce the DE_{360} . Based on desirability, the optimum formula of nifedipine floating tablet obtained is 90 mg HPMC and 30 mg of sodium alginate in 300 mg tablet.

Keywords: Nifedipine, floating tablet, HPMC, sodium alginate