INTISARI

AGUSTINA, S. W., 2016, OPTIMASI TABLET *FLOATING* PROPRANOLOL HIDROKLORIDA MENGGUNAKAN ETIL SELULOSA DAN ASAM SITRAT TERHADAP KEMAMPUAN MENGAPUNG DAN PELEPASAN OBAT DENGAN METODE *FACTORIAL DESIGN*. FAKULTAS FARMASI, UNIVERSITAS SETIA BUDI, SURAKARTA.

Propranolol HCl merupakan nonselektif reseptor β-adrenergik untuk pengobatan hipertensi dan *angina pectoris*. Propranolol HCl diabsorbsi baik di lambung dengan waktu paruh 3-6 jam sehingga perlu dibuat sediaan oral lepas lambat yang tertahan di lambung (GRDDS) untuk meningkatkan bioavailabilitas, mengurangi frekuensi penggunaan, dan menjaga konsentrasi obat dalam darah. Sediaan GRDDS dibuat dengan *floating system*. Penelitian ini bertujuan untuk mengoptimasi dan mengevaluasi pengaruh faktor etil selulosa dan asam sitrat terhadap sifat fisik dan pelepasan obat serta mengetahui kinetika dan mekanisme pelepasan obat pada tabet *floating* propranolol HCl.

Metode *factorial design* digunakan untuk mengoptimasi tablet *floating* propranolol HCl menggunakan faktor etil selulosa dan asam sitrat sebagai variabel bebas. *Superimposed contour plot* menggambarkan daerah optimum dengan parameter kekerasan, *floating lag time*, *swelling index*, Q_{60}, Q_{180}, dan Q_{300} dari *software* Design Expert® versi 7.1.5.

Asam sitrat merupakan faktor yang menurunkan *floating lag time* tetapi menurunkan *total floating time*, meningkatkan *swelling index*, dan meningkatkan pelepasan obat. Peningkatan etil selulosa meningkatkan *floating lag time* menurunkan *swelling index*, dan menurunkan jumlah obat yang dilepaskan. Kinetika pelepasan mengikuti model Weibull dan mekanisme pelepasan secara difusi dan *non-Fickian diffusion* pada formula dengan aras tinggi asam sitrat dan etil selulosa. Daerah optimum *superimposed contour plot* yang diperoleh yaitu faktor asam sitrat 32,0 mg dan faktor etil selulosa 78,85 mg.

Kata kunci : asam sitrat, etil selulosa, *factorial design*, *floating lag time*, *floating system*, GRDDS, tablet *floating* propranolol HCl, *total floating time*

ABSTRACT

AGUSTINA, S. W., 2014, OPTIMIZATION OF PROPRANOLOL HYDROCHLORIDE FLOATING TABLET USING ETHYL CELLULOSE AND CITRIC ACID ON FLOATATION BEHAVIOR AND DRUG RELEASE BY *FACTORIAL DESIGN* METHOD, FACULTY OF PHARMACY, SETIA BUDI UNIVERSITY, SURAKARTA.

Propranolol HCl is a non-selective β-adrenergic receptor that has been used to treat hypertension and angina pectoris. *Propranolol HCl is well absorbed in stomach* with half-life about 3-6 hours, thus need to be formulated in sustained released dosage form that can retain the dosage form in the stomach (GRDDS) to improve its bioavailability, reduced frequency of use, and prolong the drug release. GRDDS dosage form is formulated by floating system. This study was purposed to optimize and evaluate the influence of ethyl cellulose and citric acid on physical properties and found out drug release kinetics and mechanism of propranolol HCl tablet with floating system.

Factorial design method was used to optimize the floating propranolol HCl tablet using ethyl cellulose and citric acid as independent variables. Superimposed contour plot was determined an optimum area on several parameters i.e. hardness, floating lag time, swelling index, Q_{60}, Q_{180}, and Q_{300} by Design Expert® software version 7.1.5.

Citric acid was factor that reduced the floating lag time and total floating time, although increased the swelling index and drug release. An increase ethyl cellulose increased floating lag time and reduced swelling index and drug release. Weibull model described the drug release kinetics and the mechanism of drug release was diffusion and non-Fickian diffusion. The optimum area based on superimposed contour plot was citric acid and ethyl cellulose of 32.0 and 78.85 mg, respectively.

Keywords : citric acid, ethyl cellulose, factorial design, floating lag time, floating system, GRDDS, floating propranolol HCl tablet, total floating time