

INTISARI

KURNIAWAN, A. OPTIMASI FORMULA TABLET LEPAS LAMBAT SALBUTAMOL SULFAT MENGGUNAKAN MATRIK XANTHAN GUM DAN Na-CMC DENGAN METODE *SIMPLEX LATTICE DESIGN*, SKRIPSI, FAKULTAS FARMASI, UNIVERSITAS SETIA BUDI, SURAKARTA.

Salbutamol sulfat mempunyai waktu paro eliminasi yang relatif pendek (2,7 jam s/d 5,5 jam). Formulasi salbutamol sulfat dalam sediaan tablet lepas lambat diharapkan dapat menghasilkan konsentrasi salbutamol sulfat dalam darah yang lebih seragam dan kadar puncak yang tidak fluktuatif. Sifat fisik tablet dan pelepasan obat dari sistem matrik hidrofil dipengaruhi oleh sifat komponen penyusun matrik yaitu: Na-CMC (tidak menunjukkan *initial burst release*) dan xanthan gum (*free flowing*).

Penelitian dilakukan dengan model *simplex lattice design* (SLD) dengan 2 komponen yaitu : Na-CMC (A), dan xanthan gum (B) sehingga didapatkan 3 rancangan formula yaitu : F1 (100% A : 0% B), F2 (50% A : 50% B), dan F3 (0% A & 100% B). Waktu alir, daya serap, kompaktilitas massa tablet serta kecepatan pelepasan salbutamol sulfat digunakan sebagai parameter optimasi. Berdasarkan model SLD didapatkan persamaan untuk masing - masing parameter tersebut, sehingga formula optimum dapat ditentukan.

Xanthan gum merupakan faktor yang berpengaruh sangat dominan dalam meningkatkan sifat alir dari granul tablet lepas lambat salbutamol sulfat. Na CMC merupakan faktor yang berpengaruh sangat dominan dalam meningkatkan kompaktilitas massa tablet. Kombinasi xanthan gum dan Na-CMC mempengaruhi kecepatan disolusi salbutamol sulfat dengan sedikit lebih banyak jumlah xanthan gum, maka pelepasan menjadi semakin efisien dan penyerapan air semakin sedikit sehingga waktu hancur tablet menjadi lama. Berdasarkan data *simplex lattice design*, perbandingan 41,94% Na-CMC dan 58,06% xanthan gum merupakan formula yang optimum dan pola pelepasannya mengikuti orde nol.

Kata kunci : Salbutamol sulfat, Na-CMC, xanthan gum, tablet lepas lambat

ABSTRACT

KURNIAWAN, A. OPTIMIZATION FORMULA OF SALBUTAMOL SUSTAINED RELEASE USING XANTHAN GUM AND Na CMC MATRIX WITH SIMPLEX LATTICE DESIGN METHOD, MINITHESIS, FACULTY OF PHARMACY, SETIA BUDI UNIVERSITY, SURAKARTA

Salbutamol sulphate has a relatively short half-life (2,7 to 5,5 hour). Sustained release formulation can produce more uniform serum concentrations with less fluctuation in peak-trough levels. The physical properties of tablet mass and the release profile of drug from hydrophilic matrices are influenced by properties of matrix components, : CMC-Na (did not show initial burst release), and xanthan gum (free flowing).

The research was done with simplex lattice design (SLD) by using 2 component : CMC-Na (A) and xanthan gum (B). Three formula were obtained that are i.e, F1 (100% A : 0% B), F2 (50% A : 50% B), dan F3 (0% A & 100% B). The Optimization parameters of salbutamol sulphate sustained-release were flow time, absorption of water, the compactibility of the tablet mass, and the release rate of salbutamol sulfat. Based on SLD model, equation was obtained for each parameters, by which the optimum formula could be determined.

Xanthan gum was the most dominant factor in increasing time flowability of salbutamol tablet mass. CMC-Na was the most dominant factor in increasing compactibility of salbutamol sulphate tablet mass. Kombination xanthan gum and CMC-Na were influence of dissolution rate by salbutamol sustained-release with little bit more xanthan gum, so more efficient release rate and less absorption of water, then time dissolve be made longer. Based on the simplex lattice design data, the comparison of 41,94% CMC-Na and 58,06% xanthan gum was the optimum tablet formula and it's release pattern followed zero order kinetics.

Key words: salbutamol sulphate, CMC-Na, xanthan gum, sustained-release