INTISARI

Rohmayanti, M., 2020. OPTIMASI NATRIUM KARBOKSI METIL SELULOSA (Na-CMC) DAN KARBOPOL 941 PADA SEDIAAN GEL DISPERSI PADAT IBUPROFEN DENGAN METODE *SIMPLEX LATTICE DESIGN*, SKRIPSI, FAKULTAS FARMASI, UNIVERSITAS SETIA BUDI, SURAKARTA.

Ibuprofen merupakan golongan *non steroid anti-inflamatory drug* (NSAID) sebagai pengobatan nyeri dan inflamasi. Ibuprofen dibuat dalam bentuk sediaan gel dengan tujuan untuk menghindari efek samping iritasi pada gastrointestinal dan *first pass effect* di hati. Tujuan dilakukan penelitian ini yaitu untuk menentukan dan mengetahui formula optimum berdasarkan parameter uji viskositas, daya sebar, dan daya lekat menggunakan metode *simplex lattice design*.

Sediaan gel menggunakan basis Na-CMC dan karbopol 941 sehingga dibuat 3 formula, yaitu F1 (Na-CMC 100%), F2 (Na-CMC 50%:karbopol 941 50%), F3(karbopol 941 100%) dioptimasi berdasarkan sifat fisik viskositas, daya sebar, daya lekat dengan metode optimasi *simplex lattice design* menggunakan softwere Design-Expert versi 10.0.1. Evaluasi sediaan meliputi pengujian organoleptis, homogenitas, pH, viskositas, daya sebar, dan daya lekat. Gel optimum diuji verifikasi terhadap sifat fisik viskositas, daya sebar, dan daya lekat serta uji stabilitas dengan metode *cycling test*.

Formula optimum gel dispersi padat ibuprofen diperoleh proporsi 3% Na-CMC dan 0% karbopol 941. Respon sifat fisik formula optimum dari hasil prediksi dan percobaan menunjukkan tidak berbeda signifikan serta tidak menunjukkan perubahan warna dan pemisahan fase setelah dilakukan uji stabilitas selama 6 siklus.

Kata kunci: *Simplex lattice design,* Na-CMC, karbopol 941, ibuprofen, *cycling test*

ABSTRACT

Rohmayanti, M. 2020., OPTIMIZATION OF CARBOXYMETHYLCELLULOSE SODIUM (Na-CMC) AND CARBOPOL 941 IN IBUPROFEN GEL SOLID DISPERSION USING SIMPLEX LATTICE DESIGN METHODS, SKRIPSI, FACULTY OF PHARMACY, SETIA BUDI UNIVERSITY, SURAKARTA.

Ibuprofen is a non-steroid anti inflammatory drug (NSAID) used for painful and inflammation. Ibuprofen gel is an effective approach evading ibuprofen's side effect in GI tract and first pass effect. This research was to determine and know the gel optimum formula based on the physical properties of viscosity, dispersive power, adhesion with Simplex Lattice Design.

Gel preparations were made using a base of Carboxymethylcellulose Sodium (CMC-Na) and carbopol 941. Three types of formula are made F1 (Na-CMC 100%), F2 (Na-CMC 50%: Carbopol 941 50%), F3 (Carbopol 941 100%) optimized based on the physical properties of viscosity, dispersive power, adhesion with Simplex Lattice Design optimization methods using trial version software Design Expert v. 10.1. The gel evaluations were organoleptic testing, homogenity, pH, viscosity, dispersive power, and adhesion. Optimum gel formula was tested verification based on the physical properties of viscosity, dispersive power, adhesion and stability with cycling test method.

The optimum formula of ibuprofen solid dispersion gel obtained with proportion of 3% Na-CMC and 0% Carbopol 941. Response to the physical properties of the optimum formula as predictions and experimental results showed a not significant difference and not show discoloration and phase separation after six stability cycles of testing.

Keywords : *Simplex lattice design,* Na-CMC, carbopol 941, ibuprofen, *cycling test*