ABSTRAK

PASKALIA PUTRI APRILIANI, 2025, OPTIMASI PROPORSI MG STEARAT : TALK DALAM PEMBUATAN TABLET CAMPURAN INTERAKTIF RAMIPRIL UKURAN *HOST* 30/40 DENGAN METODE *SIMPLEX LATTICE DESIGN*, SKRIPSI, PROGRAM STUDI S1 FARMASI, UNIVERSITAS SETIA BUDI, SURAKARTA, Dibimbing oleh Dr. apt. Ilham Kuncahyo, M.Sc Dan apt. Nur Aini Dewi Purnamasari, M.Sc.

Ramipril merupakan obat antihipertensi yang termasuk dalam *Biopharmaceutics Classification System* (BCS) kelas II dengan kelarutan rendah sehingga membatasi bioavailabilitasnya. Peningkatan disolusi ramipril dilakukan melalui teknik campuran interaktif menggunakan ukuran partikel *host* 30/40. Selain itu, penggunaan bahan pelicin seperti magnesium stearat dan talk diketahui memengaruhi mutu fisik dan disolusi tablet. Penelitian ini bertujuan untuk mengoptimasi proporsi magnesium stearat dan talk dalam formulasi tablet campuran interaktif ramipril menggunakan metode Simplex Lattice Design guna memperoleh tablet dengan mutu fisik dan disolusi yang optimal.

Penelitian ini menghasilkan 6 formula tablet dengan variasi perbandingan Mg stearat dan talk. Tablet dibuat dengan metode kempa langsung dan dievaluasi melalui uji kekerasan, kerapuhan, waktu hancur, serta disolusi. Data hasil pengujian dianalisis secara statistik menggunakan perangkat lunak *Design Expert* versi 13 dengan pendekatan *Simplex Lattice Design* untuk menentukan formula optimum.

Hasil penelitian menunjukkan bahwa variasi proporsi Mg stearat dan talk berpengaruh terhadap mutu fisik dan disolusi tablet campuran interaktif ramipril. Peningkatan proporsi talk menghasilkan tablet dengan kekerasan yang memenuhi persyaratan, kerapuhan rendah, waktu hancur lebih singkat, dan disolusi meningkat. Formula optimum diperoleh pada perbandingan Mg stearat dan talk sebesar 0,5 : 1,5 dengan kekerasan 3,6 kg, kerapuhan 0,35%, waktu hancur 4 menit 13 detik, serta disolusi menit ke-30 sebesar 96,21%..

Kata kunci : Ramipril, Campuran interaktif, Optimasi, *Simplex Lattice Design,* Mg stearat, Talk

ABSTRACT

PASKALIA PUTRI APRILIANI, 2025, OPTIMIZATION OF THE PROPORTION OF Mg SREARATE : TALC IN THE PREPARATION OF INTERACTIVE MIXTURE RAMIPRIL TABLETS WITH HOST SIZE 30/40 USING THE SIMPLEX LATTICE DESIGN METHODE, UNDERGRADUATE THESIS, BACHELOR OF PHARMACY STUDY PROGRAM, SETIA BUDI UNIVERSITY, SURAKARTA. Supervised by Dr. apt. Ilham Kuncahyo, M.Sc. and apt. Nur Aini Dewi Purnamasari, M.Sc.

Ramipril is a BCS class II antihypertensive drug with low solubility, which limits its bioavailability. To improve dissolution, an interactive mixture technique with a host size of 30/40 was applied. The use of lubricants such as magnesium stearate and talc also affects the physical quality and dissolution of tablets. Therefore, this study aimed to optimize the proportion of magnesium stearate and talc in the formulation of interactive mixture ramipril tablets using the Simplex Lattice Design method to obtain tablets with optimal physical properties and dissolution.

In this study, six formulations with different ratios of magnesium stearate and talc were prepared. Critical parameters evaluated included hardness, friability, disintegration time, and dissolution. Interactive mixture ramipril tablets were manufactured by the direct compression method. The tablets were evaluated for physical quality and dissolution, and the results were compared with standard references. Data were statistically analyzed, and formulation optimization was performed using Design-Expert software version 13 and the Simplex Lattice Design method to obtain the optimal tablet formulation.

The results showed that variations in the proportion of the combination of Mg stearate and talc affected the physical quality and dissolution of ramipril interactive mixed tablets, the greater the proportion of talc, the harder the tablet was, the lower the friability, the faster the disintegration time, and the higher the dissolution rate. The optimum formula was obtained in a combination of Mg stearate and talc with a ratio of 0.5: 1.5 which produced tablets with a hardness of 3.6 kg, friability of 0.35%, disintegration time of 4 minutes 13 seconds, and dissolution at the 30th minute of 96.21% which was better than other formulas.

Keywords : Ramipril, Interactive mixture, Optimization, Simplex Lattice Design, Mg stearate, Talc.