

ABSTRAK

Ketoprofen merupakan obat antiinflamasi nonsteroid yang termasuk dalam *Biopharmaceutics Classification System* (BCS) kelas II dengan kelarutan rendah dan permeabilitas tinggi. Kelarutan yang rendah dapat menyebabkan laju disolusi ketoprofen lambat sehingga memengaruhi bioavailabilitas. Salah satu upaya meningkatkan disolusi ketoprofen adalah pembentukan sistem dispersi padat menggunakan PEG-6000 dan neusilin sebagai pembawa. Penelitian ini bertujuan mengetahui perbedaan parameter disolusi dispersi padat ketoprofen dibandingkan campuran fisik serta mengetahui pengaruh perbedaan rasio PEG-6000 dan neusilin terhadap parameter disolusi ketoprofen.

Penelitian ini merupakan penelitian eksperimental murni dengan rancangan acak lengkap. Dispersi padat dibuat menggunakan metode *solvent evaporation* dengan rasio PEG-6000 : neusilin 2:6, 4:4, dan 6:2 (b/b), sedangkan campuran fisik dibuat menggunakan *cubic mixer*. Uji disolusi dilakukan menggunakan medium dapar fosfat pH 6,8 dengan parameter %Q kumulatif dan *dissolution efficiency* pada menit ke-120 (DE_{120}). Data dianalisis menggunakan *Independent T-Test*, *One-Way ANOVA*, dan *post hoc Tukey*.

Hasil penelitian menunjukkan seluruh formula dispersi padat memiliki nilai DE_{120} lebih tinggi dibandingkan campuran fisik, dengan nilai tertinggi pada formula 1 (104,28%), diikuti formula 3 (96,67%) dan formula 2 (85,00%). Perbedaan antara dispersi padat dan campuran fisik bermakna pada formula 1 dan formula 3, sedangkan pada formula 2 tidak bermakna. *One-Way ANOVA* menunjukkan adanya perbedaan yang bermakna antar formula dispersi padat. Dengan demikian, dispersi padat menunjukkan parameter disolusi lebih baik dibandingkan campuran fisik pada formula 1 dan formula 3, sedangkan perbedaan rasio PEG-6000 dan neusilin memengaruhi parameter disolusi ketoprofen.

Kata kunci: ketoprofen, dispersi padat, PEG-6000, neusilin, *dissolution efficiency*

ABSTRACT

Ketoprofen is a nonsteroidal anti-inflammatory drug classified as a Class II drug according to the Biopharmaceutics Classification System (BCS), characterized by low solubility and high permeability. Its low solubility may result in a slow dissolution rate, thereby affecting its bioavailability. One approach to improve the dissolution of ketoprofen is the development of a solid dispersion system using PEG-6000 and neusilin as carriers. This study aimed to determine the difference in dissolution parameters between ketoprofen solid dispersions and physical mixtures and to determine the effect of different PEG-6000 and neusilin ratios on the dissolution parameters of ketoprofen.

This study was a true experimental study using a completely randomized design. Solid dispersions were prepared using the solvent evaporation method with PEG-6000 : neusilin ratios of 2:6, 4:4, and 6:2 (w/w), while physical mixtures were prepared using a cubic mixer. Dissolution testing was performed using phosphate buffer medium at pH 6.8, with cumulative %Q and dissolution efficiency at 120 minutes (DE_{120}) as the dissolution parameters. The data were analyzed using the Independent Samples T-Test, One-Way ANOVA, and Tukey post hoc test.

The results showed that all solid dispersion formulations had higher DE_{120} values than the physical mixtures, with the highest value observed in formula 1 (104.28%), followed by formula 3 (96.67%) and formula 2 (85.00%). The difference between the solid dispersions and physical mixtures was statistically significant for formula 1 and formula 3, whereas no significant difference was observed for Formula 2. One-Way ANOVA showed a significant difference among the solid dispersion formulations. Therefore, the solid dispersions demonstrated better dissolution parameters than the physical mixtures for Formula 1 and Formula 3, while differences in the PEG-6000 and neusilin ratios affected the dissolution parameters of ketoprofen.

Keyword: ketoprofen, *solid dispersion*, PEG-6000, neusilin, *dissolution efficiency*