ABSTRACT

The Influence of L-lysine to Dissolution Rate of Ketoprofen in Solid Dispersion System of Ketoprofen-PEG 8000

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Ketoprofen is a Non Steroid Anti Inflammatory Drug, which practically insoluble in water, but it has good penetration on the biological membrane, so that dissolution rate is the rate limiting step of drug absorption process and determine bioavailability of oral drug administration. The aims of this study were to enhance the dissolution rate of ketoprofen using solid dispersions of ketoprofen-PEG 8000 with the addition of L-lysine that could increase drug wettability and salt formation. Ternary solid dispersions of ketoprofen-PEG 8000-L-lysine were prepared by solvent method with concentration ratio 5:5:1 and 5:5:2. Dissolution studies conducted using basket method at a rotating speed of 100 rpm, in 900 ml of carbon dioxide-free water (pH 5.73) which was maintained at 37 ± 0.5°C as a dissolution media. The dissolution rate of ternary solid dispersions were compared with binary solid dispersion (with ratio 5:5), physical mixtures, and pure drug. The result indicated that dissolution rate of ketoprofen in ternary solid dispersion (with ratio 5:5:2) was the highest dissolution rate compared to binary solid dispersion, physical mixtures, and pure drug. Specifically, within the first 15 minutes and 30 minutes, ternary solid dispersion with ratio 5:5:2 showed the dissolution rate 1.50 fold, 1.43 fold, 1.94 fold, and 1.74 fold compared to ternary solid dispersion with ratio 5:5:1 and binary solid dispersion respectively. Improved drug dissolution was attributed by particle size reduction of ketoprofen, improved wetting and the solubilizing by PEG 8000, and salt formation between ketoprofen and L-lysine. The result also showed that the improvement of drug dissolution rate in solid dispersions were increased proportionally with the increasing of L-lysine.

Key words : Ketoprofen, PEG 8000, L-lysine, Solid dispersion, Dissolution rate.