SOLID DISPERSION OF MELOXICAM-HPMC 3CPS-NICOTINAMIDE FOR IMPROVING SOLUBILITY AND DISSOLUTION OF MELOXICAM

ABSTRACT

Meloxicam is nonsteroid antiinflamation agent that has an absorption problem, mainly due to its poor solubility in water and oral bioavailability. To improve meloxicam physical properties, especially solubility and dissolution properties, meloxicam-HPMC 3cps-nicotinamide solid dispersion was successfully formed using solvent evaporation method. Solid dispersion (SD) is an effective formulation strategy to improve dissolution rate of poorly water-soluble compounds. The aim of this study is to determine effect of meloxicam-HPMC 3cps-nicotinamide solid dispersion to solubility and dissolution. Result from DTA showed shift in the melting point of the solid dispersion to be lower than pure meloxicam showed that meloxicam is dispersed molecularly. In the spectra (FTIR) of solid dispersion systems there is a widening and shifting of the transmission peak at 3000-3500 cm^{-1} which resembles the peak of pure meloxicam transmission. Widening and shifting of this peak indicates that intermolecular hydrogen bonds are formed between meloxicam, HPMC 3cps and nicotinamide. PXRD profile showed that solid dispersion has a lower intensity compared to pure meloxicam. The saturation solubility test of meloxicam was obtained at 360 minutes : 13.67 μg/mL. The solubility and efficiency dissolution (ED_{60}) were increased 3,59 times and 1,5 times higher than meloxicam. The highest SD with ratio 1:2:1. It can be concluded that meloxicam-HPMC 3cps-nicotinamide solid dispersion system increase solubility and dissolution of meloxicam.

Keywords : Solid dispersion, meloxicam, HPMC 3cps, nicotinamide, solubility and dissolution rate.