



Preparation of Indomethacin Solid Dispersions by Mechanochemical Technology and the Characterization

Yin XIAO ¹, Meijing YU ², Tingyu JIN ¹ & Xingyi ZHU ^{1,2 *}

¹ Collaborative Innovation Center of Yangtze River Delta Region Green Pharmaceuticals,
Zhejiang University of Technology, Hangzhou 310014, China

² College of Pharmaceutical Sciences, Zhejiang University of Technology, Hangzhou 310014, China

SUMMARY. Solid dispersions (SDs) of indomethacin (IMC) with different excipients were prepared by mechanical ball milling to improve the solubility and dissolution rate of IMC. The SDs of IMC was characterized by differential scanning calorimetry, X-ray diffraction, fourier transform infrared spectroscopy. In addition, the solubility, dissolution rate and stability tests were also carried out to evaluate the SDs of IMC. The results showed that IMC was in an amorphous state and uniformly dispersed in SD. Meanwhile, the solubility and dissolution rate of IMC in SDs were significantly improved and hydroxypropyl methylcellulose acetate succinate was selected as optimal excipients to prepare SDs of IMC.

RESUMEN. Se prepararon dispersiones sólidas (SDs) de indometacina (IMC) con diferentes excipientes mediante molienda mecánica de bolas para mejorar la solubilidad y la velocidad de disolución de IMC. La SD de IMC se caracterizó por calorimetría de barrido diferencial, difracción de rayos X y espectroscopía infrarroja por transformada de Fourier. Además, también se llevaron a cabo las pruebas de solubilidad, velocidad de disolución y estabilidad para evaluar las DE de IMC. Los resultados mostraron que IMC estaba en un estado amorfo y uniformemente disperso en SD. Mientras tanto, la solubilidad y la velocidad de disolución de IMC en SD mejoraron significativamente y se seleccionó succinato de acetato de hidroxipropil metilcelulosa como excipientes óptimos para preparar SD de IMC.

KEY WORDS: ball milling, dissolution rate, indomethacin, solid dispersions, solubility,

* Author to whom correspondence should be addressed. E-mail: zxy@zjut.edu.cn