



Improvement of Domperidone Solubility and Dissolution Rate by Dispersion in Various Hydrophilic Carriers

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Abstract:

The aim of this work was to improve the solubility and dissolution rate of poorly-soluble, weakly-basic, antiemetic drug; domperidone (DMP) using solid dispersion technique. Solubility studies of DMP with various hydrophilic carriers including sorbitol, mannitol, PEG 4000, PEG 6000, pluronic F-68 and pluronic F-127 were performed. Pluronic F-68 and pluronic F-127 showed the highest solubilizing effect on DMP and therefore; they were selected for the preparation of solid dispersions in different weight ratios by the fusion method. The solid dispersions were characterized using Fourier-transform infrared spectroscopy (FT-IR), Differential Scanning Calorimetry (DSC), Powder X-ray Diffractometry (P-XRD), solubility determination and in-vitro dissolution rate studies. FT-IR and DSC studies confirmed the absence of incompatibilities between DMP and the used carriers. DSC and P-XRD studies proved the transformation of drug from crystalline to amorphous state in the prepared solid dispersions. The results showed marked improvement of DMP solubility and dissolution rate from the solid dispersions compared with the pure drug and indicated the superiority of solid dispersions prepared with pluronic F-68 over those prepared with pluronic F-127. It can be concluded that solid dispersion technique was an effective tool in the enhancement of DMP dissolution.

Keywords:

Domperidone, Solubility, Pluronic, Solid dispersions, dissolution.

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