Research Paper

FORMULATION DEVELOPMENT AND EVALUATION OF IMMEDIATE RELEASE TABLET OF RIPAGLINIDE

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In the present investigation an attempt was made to improve the solubility and dissolution rate of poorly soluble drug Repaglinide by solid dispersions(SDs) and inclusion complexs(ICs) technique and hence to formulate the fast-dissolving tablets of Repaglinide by using different Superdisintegrants. The phase solubility studies indicated that the formation of Repaglinide-β-Cyclodextrin and Repaglinide-Poloxamer 188 are in 1:1M ratio in solution. ICs of Repaglinide with β-Cyclodextrin and SDs with Poloxamer 188 were prepared at various proportions (1:1, 1:3, 1:5 and 1:7) by kneading and solvent evaporation method. The drug release profile was carried out in 0.1 N HCl using USP type II paddle dissolution apparatus. From the above studies, it was found that the kneading method shows the better enhancement of dissolution in comparison to the solvent evaporation and physical mixture (PM) method. The IC in the ratio of 1:3 was found to have highest dissolution rate compared to intact Repaglinide, SDs and PMs. The formation of ICs was evident in these formulations as shown by Fourier-transform infrared (FTIR) spectroscopy and X-ray diffraction (X-RD) studies. The fast dissolving tablets were formulated by using different superdisintegrating agents like Crosspovidone, Sodium Starch Glycolate and Croscarmellose sodium from optimized β-Cyclodextrin ICs. The prepared batches of tablets were evaluated for hardness, friability, weight variation, disintegration, drug content and *in- vitro* dissolution studies. The optimized formulation F4 containing Crosspovidone showed the maximum percentage of drug release i.e. 99.46% at the end of 25 minutes. Drug release from all the tablets followed first order release kinetics with Fickian diffusion mechanism.

Key words: β-Cyclodextrin, *in-vitro* drug release, Phase Solubility, Repaglinide, Solid Dispersion.

www.pharmaerudition.org Feb. 2022, 11(4), 15-10