Formulation of Immediate Release Pellets Containing Famotidine Solid Dispersions

Mohamed Abbas Ibrahim, Mahmoud El-Badry

Abstract:

Famotidine (FM) is a potent H2-receptor antagonist used for the treatment of peptic ulcer. It has a low and variable bioavailability which is attributed to its low water solubility. In this study, the dissolution of the drug was enhanced by a preparation of solid dispersion using two hydrophilic carriers, namely Gelucire 50/13 and Pluronic F-127. The prepared solid dispersions were characterized by differential scanning calorimetry (DSC), which indicated that there were no signs of interaction of the drug with the carriers used in the case of solid dispersions containing higher polymeric contents (1:3 and 1:5). FM solid dispersions in the matrices of Gelucire 50/13 and Pluronic F-127 (1:3) were used to prepare pellets. The scanning electron microscope (SEM) images of pellets showed that the pellets have spherical shape and their size depends on the carrier used. The dissolution of the drug from either solid dispersion or pellets was performed. The dissolution study depicted that, the presence of the drug in solid dispersion enhanced its dissolution in comparison with the drug itself. Also, the drug release from the manufactured pellets was found to be improved in the case of solid dispersions (drug : carrier 1:3). A complete drug release occurred after 30 min from pellets containing solid dispersions, while only about 30% of the loaded FM was released from pellets containing untreated drug after 2 h.

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