solid dispersions of ketoconazole (KET) in order to enhance its dissolution. The phase solubility studies were carried out by the method described by Higuchi and Connors. The solid dispersions of MCC and soluble starch were prepared using solvent evaporation method, whereas inclusion complexes with β-cyclodextrin (β-CD) were prepared by co-evaporation method. The prepared formulations were evaluated for percentage yield, drug content, thermal characteristics, X-Ray diffraction pattern, SEM analysis and in-vitro drug release. The solubility of ketoconazole at 25 °C was found to be 15.972 μg/ml. The stability constant value was found to be 883.9 M⁻¹ which indicated the stability of KET-βCD complexes at 1:1 molar ratio. Inclusion complexes at 1:3 molar ratios showed fastest dissolution rate (83.60 % after 120 minutes) in distilled water. Solid dispersion of ketoconazole with MCC and soluble starch showed better dissolution at 1:10 weight ratio (74.49 % and 63.62 % respectively). The studies showed that solubility and dissolution rate of ketoconazole were distinctively increased in the prepared binary mixtures compared to pure ketoconazole. The order of increase in dissolution rate with different carriers was β-CD > MCC > soluble starch. Increase in solubility and dissolution rate was ascribed due to the conversion of crystalline form into partially amorphous form and reduction in particle size with surface adsorption of drug onto carrier as shown by PXRD pattern and SEM analysis. The study concluded that addition of carriers such as β-CD and MCC to ketoconazole was able to improve its dissolution rate.

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Formulation and Evaluation of Gastroretentive Matrix Tablets of Metformin Hydrochloride with Xanthan and Tamarind Gum

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Gastroretentive floating drug delivery systems (GRFDDS) were often designed to prolong the gastric residence time of drugs with absorption window in the upper parts of gastrointestinal tract to improve their bioavailability. GRFDDS offer continuous input of drug at its site of absorption due to their ability to float on gastric contents over prolonged period of time. The aim of the present study was to develop optimal gastroretentive drug delivery system for Metformin HCl. Metformin HCl, an antidiabetic drug, with absorption window in the stomach, has oral bioavailability of around 50 %, probably due to its poor absorption from lower gastrointestinal tract. The present study was to formulate Metformin HCl matrix tablets with natural release retardants like xanthan and tamarind gum (Tamarind Kernel Powder). The gastroretentive matrix tablets of Metformin HCl were prepared using xanthan and tamarind gum in different ratios, sodium bicarbonate was used as gas generating agent for buoyancy. Four formulations, TKP 2, TKP 3, TKP 4 and TKP 5 were prepared using tamarind gum:xanthan in the ratios of 4:1, 3:2, 2:3, 1:4, whereas TKP 1 and TKP 6 were prepared using only tamarind gum and xanthan respectively. The matrix tablets were prepared by wet granulation method with 1 % w/v xanthan as binder solution and evaluated for pharmacopeial requirements. All the prepared formulations exhibited good tablet characteristics with a floating lag time of < 1 min. The drug release profiles of the matrix tablets indicated the inability of tamarind gum to control the release when used alone. However, TKP 3 has short floating lag time (< 30 sec), and was found to have an optimum release of 99.29% in 10 h. The