Research in Pharmaceutical Sciences, 2012;7(5)
School of Pharmacy and Pharmaceutical Sciences
Isfahan University of Medical Sciences

Evaluation of the serum concentration of gliclazide from its solid dispersions with crosspovidone in the rats

H. Hajiloo*, H. Babaei, M. Barzegar-Jalali, K. Adibkia

Faculty of Pharmacy, Tabriz University of Medical Sciences, Tabriz, Iran

Background and Aims: Glyclizide is an anti-diabetic sulphonyl-urea drug used for treatment of diabetes mellitus type II. It is almost insoluble in water and its low absorption depends on solubility. In the current study, crosspovidone used as carrier by cogrinding method for solid dispersions of gliclazide (In the ratio of 1:1) in order to maximize drug solubility and absorption in GI tract. Finally hypoglycemic effect of drug in SD formulation physical dispersion and pure drug was assessed to achieve optimum formula for high absorption and high effectiveness.

Methods: Three groups of healthy rats each included 6, selected and injected with 60 mg/kg streptozosin intraperitoneally. After 72 h rats were diabetics.

Then 40 mg/kg of pure drug, 40 mg/kg of physical dispersion (1:1) and 40 mg/kg of SD formulation injected to above groups, respectively . At 0 , 1 , 3 , 6 ,8 h after injection, blood sampling was done and serum concentration of drug was determined by HPLC.

Results: Date analysis revealed that serum concentration of SD formulation was significantly ($p<0.05$) different from pure drug and physical dispersion. Area under curve (AUC) of drug concentration against time was 1171.8 for pure drug, 1379.5 for physical drug and 4827 for SD drug.

Conclusions: SD formulation probably by enhancing solubility rate yielded better effectiveness and also simultaneously reduced dosage and side effects.

Keywords: Glyclizide, Diabetic, Solid dispersions, Blood sugar