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3^2-Full Factorial Design and *In Vivo* Pharmacodynamic Evaluation of Liquisolid Formulation of Glipizide for Solubility Enhancement

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***SUMMARY*. The aim of the present study was to improve dissolution rate of glipizide by liquisolid technique and investigate *in vitro* and *in vivo* performance of prepared liquisolid systems compared to glipizide. The technique brings out conversion of liquid medications such as drug solution or suspension in suitable non-volatile liquid vehicle into powder with acceptable flow properties and compressibility. The mathematical model by Spireas with a 3^2-full factorial design was employed to formulate liquisolid systems using % drug in liquid medication and carrier to coat ratio as two independent factors. FTIR spectroscopy and DSC study were employed for evaluation of physicochemical properties of glipizide in liquisolid tablets. Precompression analysis showed excellent flowability and compressibility. Different tablet properties like hardness and friability were found acceptable. Dissolution study of all liquisolid formulations exhibited higher dissolution rates than conventional tablets as well as drug alone, attributed due to increased wetting properties and effective surface area. The optimized formulation was tested for pharmacodynamic activity in normal and diabetic wistar rats, which showed faster reduction in blood glucose level with liquisolid formulation. Accelerated stability study indicated good physical and chemical stability of formulation.**

KEY WORDS: 3^2-factorial design, Glipizide, Liquisolid, Pharmacodynamic evaluation.

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