Latin American Journal of Pharmacy
(formerly *Acta Farmacéutica Bonaerense)*
Lat. Am. J. Pharm. **30** (8): 1590-5 (2011)

Regular Article
Received: July 18, 2011
Revised version: July 27, 2011
Accepted: August 5, 2011

Optimization and Pharmacodynamic Evaluation of Solid Dispersion of Gliclazide for Dissolution Rate Enhancement

Avinash H. HOSMANI *[1] & Yogesh S. THORAT [2]

[1] *Dept. of Pharmaceutics, Govt. College of Pharmacy, Karad, Maharashtra, 415110, India.*
[2] *Dept. of Pharmacology, DSTSM's College of Pharmacy, Solapur, Maharashtra,413004, India.*

***SUMMARY*. The present study utilizes approach of solid dispersions (SDs) to improve dissolution rate of Gliclazide (GLZ); a poorly water soluble anti-diabetic drug. Formulations were prepared by solvent evaporation and melt dispersion techniques using poloxamer as hydrophilic carriers. SDs and physical mixtures (PM) were characterized by thin layer chomatography, FTIR spectroscopy, X-Ray Diffractometry, and Differential Scanning Calorimetry. TLC was used to identify any possibility of degradation during preparation and optimize melting temperature for melt dispersion batches, which was supported by FTIR and DSC, showing absence of chemical interaction between the drug and carrier. XRD showed that GLZ was converted to amorphous form. Enhancement in dissolution was found more prominent with melt dispersions compared to solvent evaporation and physical mixtures. *In vivo* pharmacodynamic bioavailability study was performed for 28 days on alloxan induced diabetic wistar rats. Blood glucose levels were evidently lowered and controlled by SD compared to GLZ alone.**

KEY WORDS: Anti-diabetic activity, Dissolution, Gliclazide, Poloxamer, Solid dispersion, Solubility Enhancement.

* Author to whom correspondence should be addressed. *E-mail:* dr.ahhosmani@gmail.com

ISSN 0326-2383