



## Dissolution Improvement of Poorly Water Soluble Drug Valsartan and Improving Flow Properties of Solid Dispersion

Sanjay J. KSHIRSAGAR\*, Mangesh R. BHALEKAR, Ashwini R. MADGULKAR,  
Preeti N. SABLE & Sunil R. GUPTA

*Department of Pharmaceutics, AISSMS College of Pharmacy, Near RTO,  
Kennedy Road, Pune-411001, Maharashtra, India.*

**SUMMARY.** The aim of the present investigation is to improve the dissolution of poorly water soluble drug valsartan by preparing solid dispersions and also to evaluate the effect of different inert carriers on flow properties of solid dispersion. Valsartan is a poorly soluble drug useful in the treatment of hypertension. Absorption window of valsartan is stomach and upper part of small intestine. One possible way to improve dissolution rate is solid dispersions of the drug. The solid dispersions were prepared by solvent evaporation method using HPMC E5 LV as water soluble carrier, as use of HPMC low viscosity polymers for solid dispersion preparations were reported in literature. But film formation took place during solid dispersion formulation and was creating difficulty in releasing the drug from formulation; and those solid dispersions, were not free flowing. Thus such preparations are not useful from the formulation development point of view. So to improve the flow properties some inert material were tried like microcrystalline cellulose (MCC) and lactose. The solid dispersions were evaluated for drug content, solubility and dissolution studies. *In vitro* drug release of solid dispersions was studied by USP type II paddle dissolution apparatus. For the solid dispersion the solubility and dissolution of the drug increased with the increase in the carrier concentration. Probable mechanisms of improved solubility and dissolution were characterized by Differential Scanning Calorimetry (DSC), Powder X-ray Diffractometry (Powder XRD) and Scanning Electron Microscopy (SEM) of drug, physical mixture and solid dispersions. This study revealed that solid dispersions technique is promising and useful for valsartan to improve its solubility and dissolution and incorporation of inert carriers improved the flow property of solid dispersion.

**KEY WORDS:** Dissolution, Solid dispersion, Solvent evaporation method, Solubility, Valsartan.

\* Author to whom correspondence should be addressed. *E-mail:* sanjayjk@rediffmail.com