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RESEARCH ARTICLE

FORMULATION AND EVALUATION OF VALSARTAN SUSTAINED RELEASE MATRIX TABLETS

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The present work was aimed to develop novel oral antihypertensive sustained release matrix tablets of Valsartan using HPMC K15M as polymer in different proportion by wet granulation method. Compatibility among the formulation components was assessed by DSC analysis. Compressed tablets were evaluated for various parameters like weight variation, drug content, hardness, friability, *in vitro* drug release and swelling behaviour. Release kinetics showed that *in vitro* release curve fitted under Korsmeyer and Peppas model which shows R^2 value 0.9930 highest as compared to other models. The results of dissolution study indicated that the formulation prepared by HPMC K15M at high concentration would produce better results.

Key words: Valsartan, HPMC, Sustained release, Matrix tablet, Antihypertensive.

INTRODUCTION

Valsartan is an angiotensin II receptor antagonist that is used for the treatment of hypertension. It treat the hypertension by blocking the vasoconstrictor and aldosterone secreting effect of angiotensin II selectively by blocking the binding of angiotensin II and angiotensin I receptor in many tissues. The most preferred route for this drug is oral delivery in form of tablets. Valsartan have poor water solubility, low bioavaibility (approximately 20-25%), and shorter half-life (nearly 6 h) (Abdelbary *et al* 2004).

Oral drug delivery has been known for decades as the most widely utilized route of administration among all the routes that have been explored for the systemic delivery of drugs *via* various pharmaceutical products of different dosage forms. The reason that the oral route achieved such popularity may be in part attributed to its ease of administration as well as the traditional belief that by oral administration the drug is as well absorbed as the food stuffs that are ingested daily (Bandelin, 2008). The low bioavailability and short half-life of valsartan make the development of sustained-release forms desirable. Sustained release system is a type of modified drug delivery system that can be used as an alternative to conventional drug delivery system (Armstrong and James, 1996). These systems sustain the release of drug and maintain the plasma drug concentration in therapeutic window except any fluctuation and increase the therapeutic efficacy of drug. They show their action by avoiding peak and trough in dosing and show constant plasma drug concentration in therapeutic window. Sustained release system have benefits like patient compliance and avoidance of multiple dosing, increased plasma drug concentration, avoidance of side effects and overcoming the problems associated with conventional system (Hingmire *et al* 2008).

Among various approaches used for novel drug delivery systems (Dahiya and Gupta, 2011; Tripathi *et al* 2011; Khan *et al* 2012; Mishra *et al* 2013; Verma *et al* 2014), matrix tablet is one of the most widely used and popular method. The goal of designing sustained or controlled release drug delivery systems of Valsartan matrix tablets