Asian J. of Bio Sci. (2007) Vol. 2 No. 2 : (156-161)

Psyllium husk as a hydrophilic matrix agent for the release of a model drug

VIPIN K. SHARMA[1]* AND A. BHATTACHARYA[2]
[1] Dept. of Pharmaceutical Sci., Faculty of Aurved & Medical Sciences, Gurukul Kangadi Vishwavidyalaya, Hardwar (U.A.)
[2] Departmentof Pharmaceutical Science, Dibrugarh University, DIBRUGARH (ASSAM) INDIA

(Accepted : September, 2007)

Psyllium husk forms the viscous gel by absorbing water. In the present study glipizide was used as a model drug. Swelling behavior study of psyllium was analyzed in 0.1N HCl, phosphate buffer (pH 7.4) and distilled water. Similar medium were used for reconstituted xerogel. Different formulations to analyze the release behavior of glipizide were prepared by using capsule shell '1' and psyllium husk as matrixing agent. The dissolution study of different formulation was performed in six stage dissolution apparatus in phosphate buffer (pH 7.4) and 0.1NHCl for 10 hours. The drug-polymer network thus obtained was characterized for drug polymer interaction by FTIR study. It has been observed that in distilled water could maintain its gel consistency for prolonged time than 0.1NHCl and phosphate buffer ($p<0.05$). It was investigated that 70% of the dispersed drug was released within 10 hours in phosphate buffer. The amount released in 0.1N HCl was significantly different than phosphate buffer ($p<0.05$). Sustaining effect of formulation was obtained very high when large amount of psyllium husk was used. FTIR study revealed that the dispersed drug was unaffected after matrix formation.

Key words : Isabgol husk, Hydrophilic matrix, Xerogel, Glipizide.

INTRODUCTION

Psyllium is the common name used for several members of the plant genus *Plantago ovata* and its seeds are used for the mucilage formation. Mucilage is a white fibrous material, hydrophilic in nature and forms the clear, colorless mucilaginous gel by absorbing water. Laidlaw and Percival (1949) secured evidence for two components, which they characterized as a polyuronoid and a neutral arabinoxylan. Later Kennedy *et al.* (1981) studied the mucilage obtained for plantago seed husk by extraction with alkali and concluded that the preparation although polydisperse, represented a single species of polysaccharide, a highly branched acidic arabinoxylan. Psyllium has been reported as medicinally active polysaccharide including cholesterol lowering capacity, laxative activity, improving insulin sensitivity (Anderson *et al.*, 2000; Song *et al.*, 2000). Psyllium supplementation has also improved blood sugar levels in some people with diabetes (Anderson *et al.*, 1999). In double blind trial, people with ulcerative colitis had a reduction in symptoms such as leading and remained in remission longer when they took 20 gm of psyllium seeds twice daily with water compared to the use of the medications mesalamine alone.

Glipizide is an effective widely used anti diabetic drugs. It has a short biological half-life of 3.4±0.7 hours and is rapidly eliminated due to its short half-life. It is a good candidate or model drug for modified drug delivery system.

The psyllium husk may act as a potential polymer for modified drug delivery. The most popular method of slow release of drug is by forming matrix system that is easy for different formulation development and manufacturing. Hydrophilic swellable matrices are used most commonly than hydrophobic matrices. The release of drug from the matrix regulated by various factors as swelling, dissolution and or erosion. In the present work, the psyllium was used as matrixing agent for Glipizide release and also to analyze the various conditions on gelling behavior.

MATERIALS AND METHODS:

Psyllium husk was procured from the local market (Baidhyanath, Jhansi). Glipizide was provided as a gift sample by Alkem Laboratories Ltd. Mumbai (India). Potassium dihydrogen phosphate was obtained from Ranbaxy Laboratories (New Delhi). All other chemicals and reagents used were of analytical grade and used without further modification.

* Author for Correspondence