

Short Communication

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Comparison of Gastro Retentive Floating Tablets of Losartan K with Conventional Marketed Tablets

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Abstract

The present study is an attempt to increase therapeutic efficacy, reduce frequency of administration and improve patient compliance of losartan potassium by developing sustained release tablets. It was formulated into gastroretentive floating tablets, employing a new floating polymer tamarind gum and known polymers xanthan gum, HPMC K4M, HPMC K15M and HPMC K100M. Comparative In-vitro drug release study with marketed tablets was carried out & formulated tablets showed 24 h sustain release. Sustained release preparations are useful to reduce the dosage frequency to improve patient convenience. Sustained release tablets are easy to fabricate by incorporating drug molecule in a slowly disintegrating and inert porous swellable polymers.

Keywords: Losartan K, HPMC, Tamarind gum, Xanthan gum, Marketed products.

Introduction

Oral delivery of drugs is by far the most preferable route of drug delivery. However, this route has several physiological problems, including an unpredictable gastric emptying rate, a brief gastro intestinal transit time and the existence of an absorption window in the upper small intestine for several drugs. Losartan potassium is a potent antihypertensive drug which is a highly specific Angiotensin II AT1 receptor antagonist. It is readily absorbed from the gastro intestinal tract, having oral bioavailability of 33% and plasma elimination half life of 1.5 to 2.5 hours. Losartan K have upper small intestine as site of absorption as rationale for selecting floating drug delivery. Eventhough there are several floating polymers, there is a continuous need to develop new floating polymer for better buoyancy and controlled release of drug.¹⁻³

Materials and methods:

Losartan potassium was received as a gift sample from Alkem Pharmaceuticals Ltd. Mg Stearate, Sodium bicarbonate, Xanthan gum and lactose Monohydrate were obtained from S.D Fine Chemicals Pvt. Ltd., HPMC and Tamarind gum were procured as gift samples from Colorcon Pvt Ltd. and Bhavna Gum Udhyog, Gujarat respectively.

Preparation of sustained release tablets

Losartan potassium Floating SR tablets (250 mg) were prepared by direct compression method using 8mm punch using directly compressible lactose.

In-Vitro Drug Release Study:

Dissolution rate studies were carried out in USP apparatus II. 900 ml of 0.1N HCl was taken as dissolution medium. Dissolution was performed at 37 ± 0.50 at 75 rpm for 24 hours. The sample (5 ml) was withdrawn at specific intervals upto 24 hours and drug content in withdrawn aliquots were analysed by UV spectrometry at 205nm.⁴

Results and discussion:

Batches of Losartan potassium tablets were prepared according to table no. 1 using various grades of HPMC, tamarind gum & xanthan gum by direct compression method. The pre-compression & post-compression parameters were within prescribed limits of IP. All batches of tablets were found to exhibit short floating lag times in seconds and formulation F7 showed higher swelling as compared to others. The figures (1) depict the desired dissolution behavior of the tablets where formulation F7 showed release for upto 24 hrs as compared to marketed formulation (A & B) which released drug within 40 minutes.

Table 1: Composition of Losartan potassium SR floating tablet

| Name of Ingredients | Quantities in mg | | | | | | |
|---------------------|------------------|-----|----|-----|----|-----|----|
| | F1 | F2 | F3 | F4 | F5 | F6 | F7 |
| Losartan K | 50 | 50 | 50 | 50 | 50 | 50 | 50 |
| HPMCK 4 M | 75 | - | - | - | - | - | - |
| HPMC K 15M | - | 50 | - | 25 | 50 | 25 | 50 |
| HPMC K 100M | - | - | 63 | - | - | - | - |
| Tamarind gum | - | - | - | 25 | 50 | - | - |
| Xanthan gum | - | - | - | | | 25 | 50 |
| Lactose | 104 | 129 | | 129 | 79 | 129 | 79 |
| Mg Stearate | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| Sodium bicarbonate | 20 | 20 | 20 | 20 | 20 | 20 | 20 |

Individual weight of tablet = 250 mg

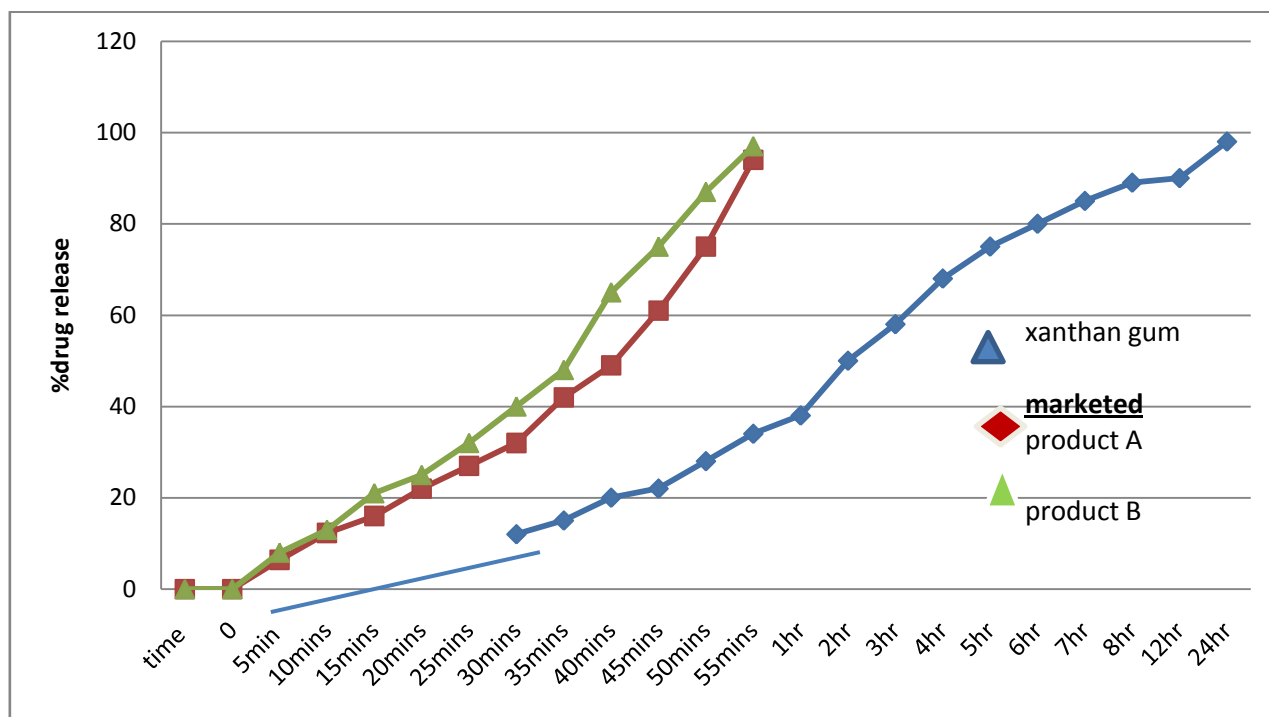


Figure 1: Comparison of In vitro release profile F7 with Conventional Marketed Tablets

Conclusion:

This study has resulted in successful development of gastroretentive floating tablets of the highly soluble drug, Losartan potassium using HPMC, tamarind gum and Xanthan gum as retardant polymers. It is evident from the results that formulation F7 prepared by using hydrophilic polymer HPMC K 15M and xanthan gum shows desired sustained release pattern as compared to other formulations studied.

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