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CONSORTIUM

Original Research Article

EFFECT OF ACIDIC AND ALKALINE MEDIUM ON FEXOFENADINE BRANDS USING UV SPECTROPHOTOMETER

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ABSTRACT

Fexofenadine is widely used drug for allergic conditions especially Rhiniti and is a selective histamine H1 receptor antagonist. In our recent research we study the effect of acidic and alkaline medium on four different brands of Fexofenadine, for this the solutions of different brands of Fexofenadine were subjected to neutral,alkaline and acidic medium. When Fexofenadine brands subjected to 0.1 N HCl and 0.1N NaOH for 30 minutes, Fexofenadine brands showed variable availability results. Xanidine and Telefast donot show any change in absorbance in acidic medium but shows a decrease in absorbance in alkaline medium. While Allerga shows a decrease in absorbance in both acidic and alkaline medium. Fexet also shows a decrease in absorbance in acidic medium but shows a increase in absorbance in alkaline medium.

Keywords: Fexofenadine,acidic medium, alkaline medium, U.V spectrophotometer.

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INTRODUCTION

Chemically Fexofenadine is((±)-2-[4-[1-hydroxy-4-[4- (hydroxydiphenylmethyl) piperidino] butyl]phenyl] - 2-methylpropanoic acid and is a selective histamine H1 receptor antagonist.it is one of the most used seasonal allergic rhinitis and chronic urticaria treatments [1]. Fexofenadine belongs to antihistamine class of drug and it is used in the treatment of allergy symptoms, such as nasal congestion , hay fever and urticaria.[2] It is often said to be a third-generation antihistamine. Its action is limited to outside the brain and spinal cord. fexofenadine produces a minimal sedation. [3] The safety profile of fexofenadine is quite favorable, it shows no cardiovascular or sedative effects to occur even when taking ten times the recommended dose.[4] the half-life of the drug is shorter than cetirizine, so it often must be taken twice daily.[5] Moreover cetirizine causes more sleepiness than fexofenadine.[6] Fexofenadine is infact a racemic mixture of *R*- and *S*-enantiomers. Both enantiomers shows equal potency in their clinical effects [7]

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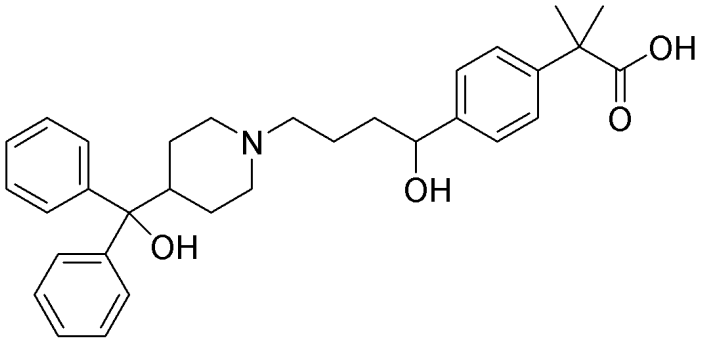

Figure-1 Structure of Fexofenadine

EXPERIMENTAL METHODOLOGY

Material and reagents

Pyrex glass wares, beakers, measuring volumetric flask, cylinder pipette, funnel and stirrer were used. All glass wares were washed and rinsed with double distilled water . Reagents used were as follows 0.1N Sodium hydroxide, 0.1N Hydrochloric acid and de-ionized water or double distilled water. All the Reagents were of Analytical grade.

Instruments

UV Lamp Power of 8N, Serial NO: N 045571, LF-204.LS '4W-254 and 365 nm', Spectrophotometer with a quartz cuvette T80 UV-VI spectrometer 'PG Instrument', Weighing Balance Item PA214C: 'Pioneer OHAIUS' and Water Bath 'HH-4' having digital and constant temperature tank.

Preparation of 0.1 N Hydrochloric acid and Sodium hydroxide

4 grams of sodium hydroxide was dissolved in small amount of water and transferred in 100ml volumetric flask and volume was made up to mark with de-ionized water.

8.3ml analytical grade hydrochloric acid having 37% purity and 12N normality was taken in a volumetric flask and volume was made up to the mark with DI water.

Preparation of solution of different brands of Fexofenadine

each tablet individually was weighed on the weighing balance. the tablets individually were grounded and triturated with the help of mortar and pestle to make them in powder form. the same procedure was repeated for the tablets of each brand. For the preparation of 200ppm solution of each brand accurately weighed triturated powder of each brand i.e. Xadine, Telfast, Allerga, Fexet equivalent to 20 mg of Fexofenadine transfrsed in to a beaker and dissolved in small quantity of DI water. these primary solutions were transfered separately into six volumetric flasks of 100ml. Finally volume was made-up with de-ionized water. The absorbance of solutions of each brand of fexofenadine was determined by using UV-Visible spectrophotometer, at wavelength max of 220nm.

Procedure:

To determine the effect of acid and base on Fexofenadine, 5 ml of 200 ppm solution of each brand of Fexofenadine was transferred in to two separate test tubes then 5 ml of 0.1 N hydrochloric acid HCl was added in one test tube and 5 ml of 0.1 N sodium hydroxide NaOH was added in another test tube respectively. Then the tubes were left for 30 minutes. The absorbance of the solution was determined using spectrophotometer at wavelength max 220nm.

Table-1 Absorbance of different brands of Fexofenadine

Absorbance of different brands of Fexofenadine				
Parameters	Xanidine	Telefast	Allerga	Fexet
water	2.154	2.254	2.98	2.382
Acid	2.154	2.254	2.313	2.365
Base	2.032	2.332	2.493	2.572

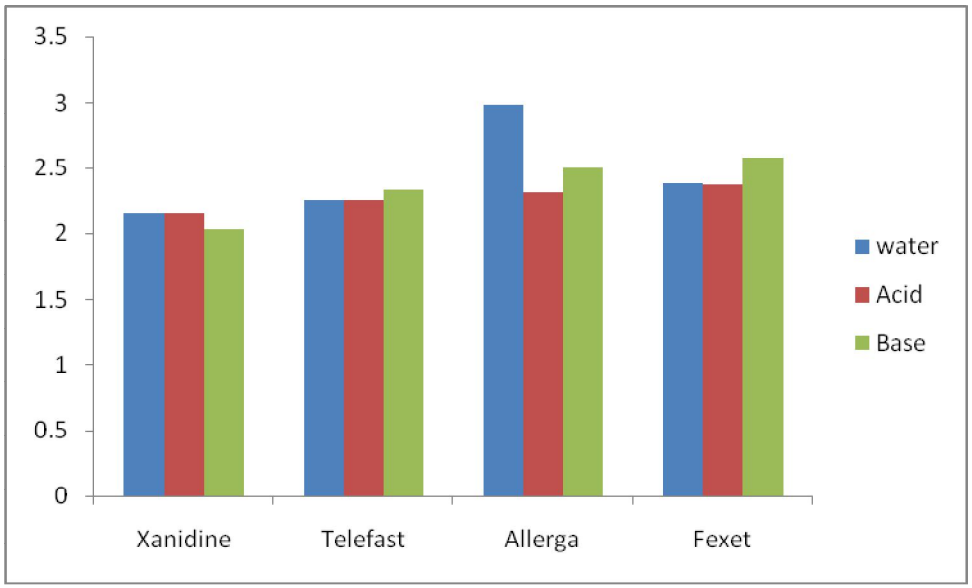

Figure-2 Absorbance patteren of different brands of Fexofenadine in different medium

RESULT AND DISCUSSION

The 200ppm solution of Four different brands of fexofendine Xadine, Telfast, Allerga, Fexet were subjected to different medium for thirty minutes i.e acidic and alkaline medium ,their absorbance was determined at wavelength maximum which was found to be 220nm. Xanidine and Telefast donot show any change in absorbance in acidic medium but shows a decrease in absorbance in alkaline medium. At neutral PH Xanidine shows a absobance of 2.154, in basic medium it show absorbance of 2.032 and in acidic medium it shows the same absorbance as in neutral medium i.e 2.154.while at neutral PH Telefast shows a absobance of 2.254, in basic medium it show absorbance of 2.332 and in acidic medium it shows the same absorbance as in neutral medium i.e 2.254.While Allerga shows a decrease in absorbance in both acidic and alkaline medium, in water i.e at neutral PH it shows a absobance of 2.98, in basic medium it show absorbance of 2.493 and in acidic medium it shows absorbance of 2.313. Fexet also shows a decrease in absorbance in acidic medium but shows a increase in absorbance in alkaline medium, in water i.e at neutral PH it shows a absobance of 2.382, in basic medium it show absorbance of 2.572 and in acidic medium it shows absorbance of 2.365.

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