

Derivative Spectrophotometric Determination of Taxim-AZ and Taxim-of Using Iron(III) Metal Ion

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Abstract—Simple, rapid, accurate, precise, reliable and economical Spectrophotometric method have been proposed for the determination of Taxim-AZ and Taxim-of by using Iron(III) in bulk and pharmaceutical formulation. The developed method have shown best result in terms of accuracy, precision for bulky drugs

Index Terms— Taxim-of, Taxim-AZ and U.V. Spectrophotometry

I. INTRODUCTION

Taxim-AZ is a combination of Cefixime and Azithromycin. Cefixime is a cephalosporin antibiotic and it is used to treat and cure bacterial infections. It is often used to treat Sineritis, Tonsillitis, Bronchitis, pneumonia, cystitis, kidney infections and Gonorrhoea. Azithromycin prevents bacteria from producing the proteins that are required to help them reproduce. It is a fact acting generic antibiotic which is used to treat a wide number of bacterial infections.

Taxim-of is a combined drug of cefixime and ofloxin. Cefixime is an antibiotic used for the treatment of various infections. Ofloxin is a synthetic chemotrapeutic antibiotic. It is developed as a broader spectrum analogue of Norfloxacin. This antibiotic is active against gram positive and gram negative bacteria. Taxim-of of a combination of these two is being used for the treatment of various vital infections.

II. EXPERIMENTAL

2.1 APPARATUS

Spectrophotometric analysis was carried out on a UV-160A (Kyto-Japan) is double beam microprocessor based spectrophotometer designed for quantitative analysis

2.2 MATERIAL AND REAGENTS

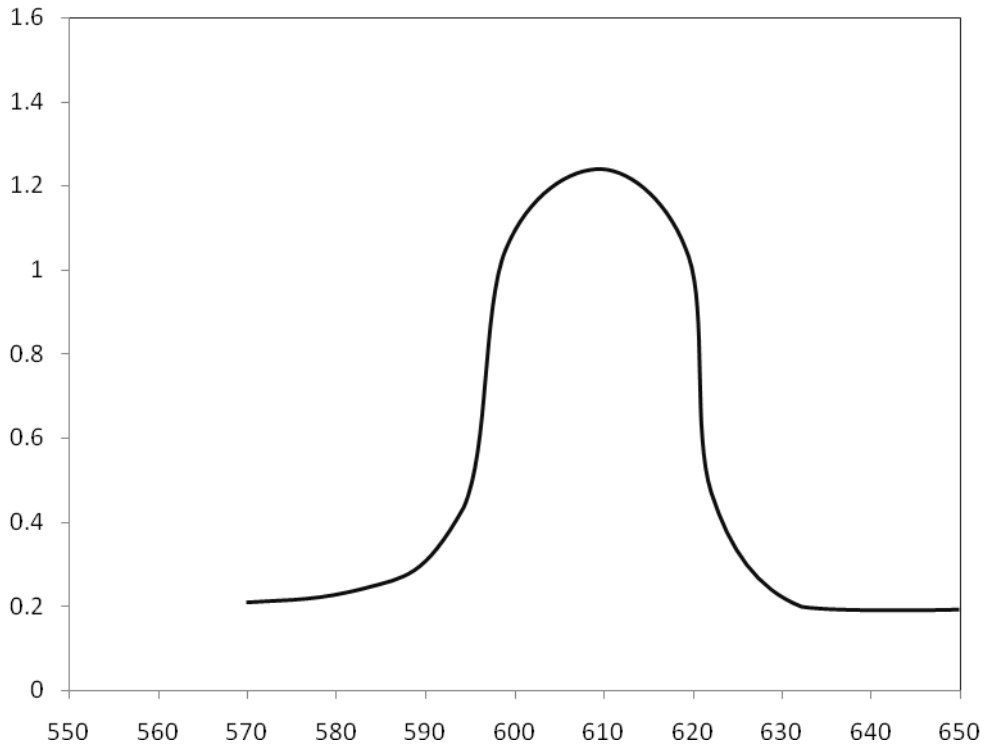
All the chemicals used were of analytical reagent grade and the solvents were of spectroscopic grade.

2.3 PREPARATION OF DRUG SOLUTION

A 100mg of Taxim-AZ and Taxim-of weighed and taken in a 100ml volumetric flask and the solution is made up to the mark.

III. ZERO ORDER UV-SPECTROPHOTOMETRY

One ml of Taxim-AZ and one ml of Taxim-of are taken in a 25ml standard flask. One ml of Fe(III) solution is added and it is made up to the mark with a buffer solution of pH-4. The spectrum is recorded in the range of 350-750nm against the blank solution. It is shown in Fig-1. In the figure only one peak is noticed at 610nm. As a result of this, it is not possible to make a simultaneous determination of two drugs using zero order spectra. An attempt is made by use the first order spectrum for simultaneous determinations. As the resolution is not appreciable and peaks are close to each other, simultaneous determination is not possible using first order spectra



Zero order spectrum of Taxim-AZ and Taxim-of in the presence of Fe(III)

$p^H = 4$ [Taxim-AZ]=0.1mg/ml [Taxim-of]=0.1mg/ml [Fe(III)]= $1 \times 10^{-4}M$

IV. SECOND ORDER SPECTRUM

The second order derivative spectrum is recorded for the same solution and the separation of two drugs is appreciable. The second order spectrum is shown in Fig-2. From the result that two peaks at 600 and 640nm are noticed and two valleys are noticed at 620 and 655nm. The individual second order spectro of Taxim-AZ peak at

600nm and valley at 620nm and Taxim-of peak at 640nm and valley at 655nm. As the derivative peaks are sharp, it is possible to make simultaneous determination using derivative spectra. The zero crossing limits for Taxim-AZ and Taxim-of are 608 and 647 nm respectively.

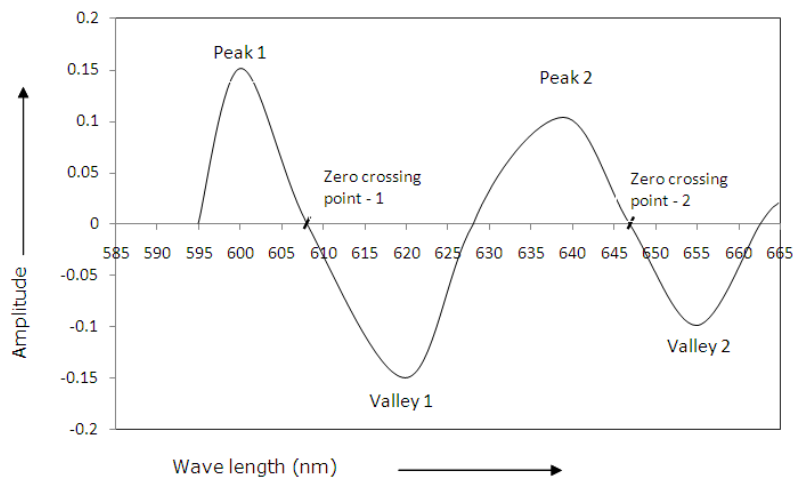


Fig - 2

II order spectrum of Taxim-AZ and Taxim-of in the presence of Fe(III) ion

$p^H = 4$ [Taxim-AZ]=0.1mg/ml [Taxim-of]=0.1mg/ml [Fe(III)]= $1 \times 10^{-3}M$

V. RESULTS AND DISCUSSION

5.1 DETERMINATION OF TAXIM-AZ IN THE PRESENCE OF TAXIM-OF

A series of solutions are prepared using different concentrations of Taxim-AZ and fixed concentration of

Taxim-of and Fe(III). The derivative spectra are recorded each of these solutions and are shown in Fig-3. The amplitudes at 60nm for peaks and at 620nm for valleys are measured

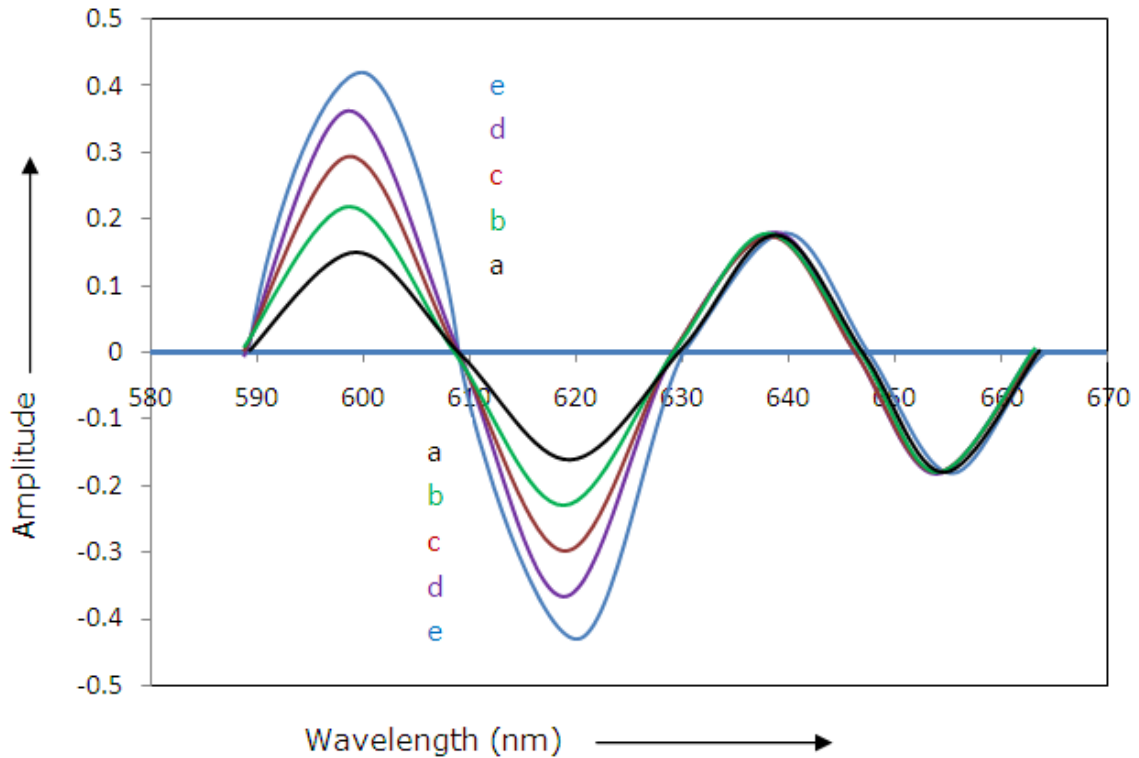


Fig - 3
II order derivative spectra of Taxim-AZ and Taxim-of in the presence of Fe(III) metal ion

Taxim-of concentration is kept constant by varying concentrations of Taxim-AZ

$p^H=4$	$[Taxim-of]=0.1mg/ml$	$[Fe(III)] = 1 \times 10^{-4}M$
$[Taxim-AZ] =$	a) 0.5ml of taxim-AZ	b) 1.0ml of taxim-AZ
c) 1.5ml of taxim-AZ	d) 2.0ml of taxim-AZ	e) 2.5ml of taxim-AZ

5.2 DETERMINATION OF TAXIM-OF IN THE PRESENCE OF TAXIM-AZ

Similarly another series of solutions are prepared with varying concentrations of Taxim-of, keeping the

concentrations of Taxim-AZ and Fe(III) constant. Second order derivative spectra are recorded for each of these solutions against a blank solution and Fe(III) ion. They are shown in the Fig-4

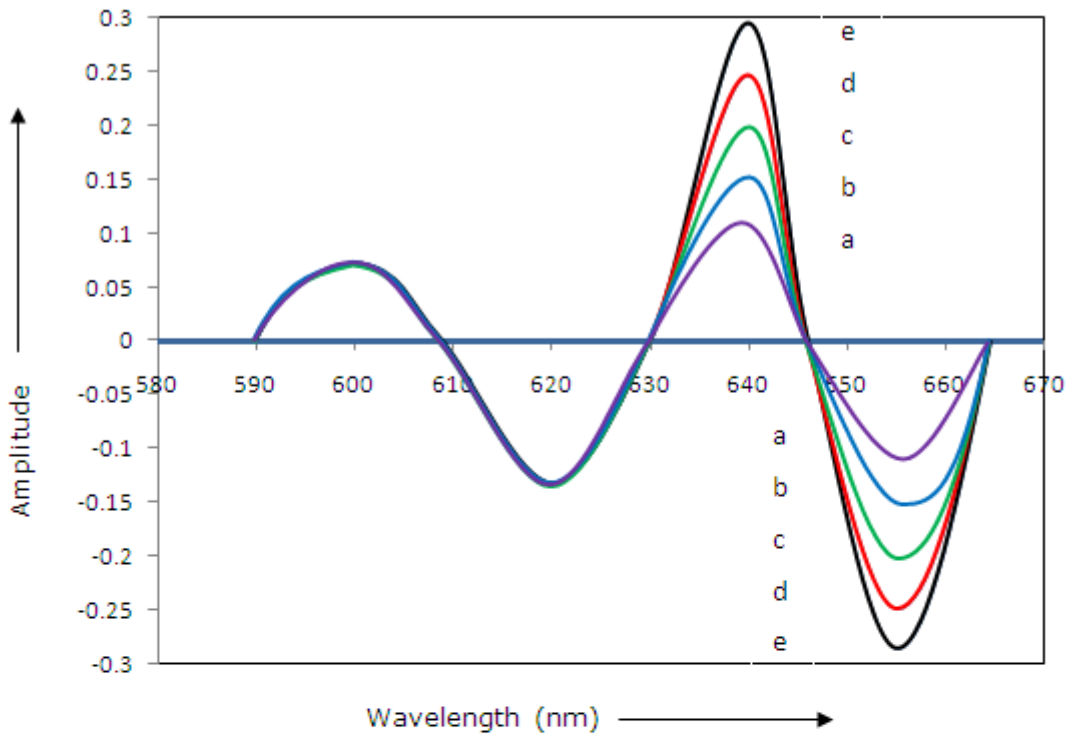


Fig - 4

II order derivative spectra of Taxim-AZ and Taxim-of in the presence of Fe(III) metal ion

Taxim-AZ concentration is kept constant by varying concentration of Taxim-of

$$p^H=4 \quad [Taxim-AZ]=0.1mg/ml \quad [Fe(III)] = 1 \times 10^{-4}M$$

$$[Taxim-of]= \begin{cases} a) 0.5ml \text{ of taxim-of} \\ b) 1.0ml \text{ of taxim-of} \\ c) 1.5ml \text{ of taxim-of} \\ d) 2.0ml \text{ of taxim-of} \\ e) 2.5ml \text{ of taxim-of} \end{cases}$$

5.3 SIMULTANEOUS DETERMINATION OF TAXIM-AZ & TAMIX-OF

The second order derivative spectra are recorded for a series of solution containing varying concentrations of

Taxim-AZ and Taxim-of in presence of fixed concentration of Fe(III). The spectrum shown in Fig-5. From the result it is clear that the peak and valley amplitudes increase proportionately for both the drugs

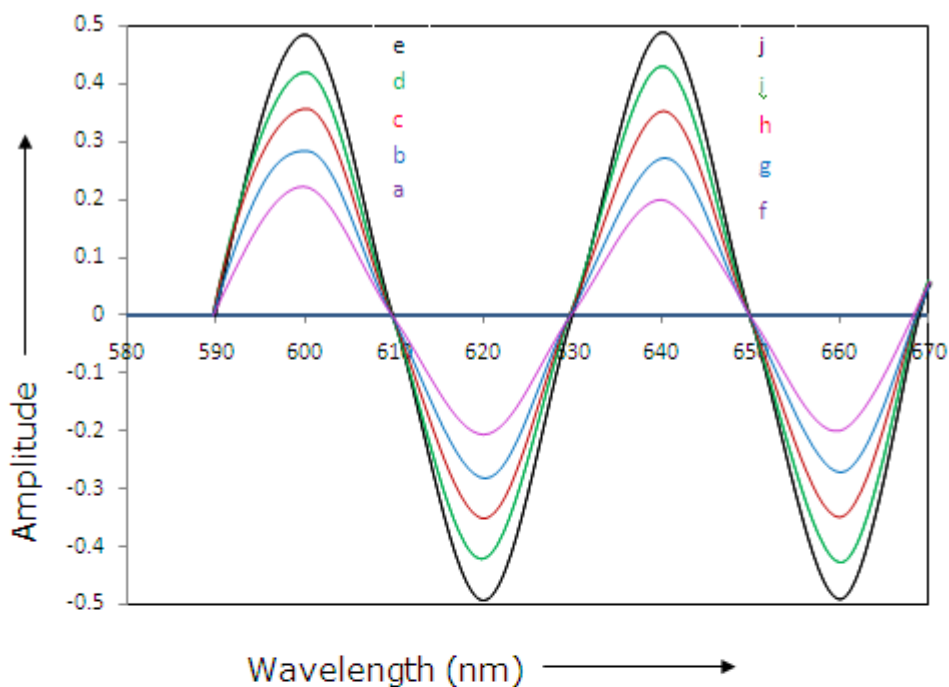


Fig - 5

II order derivative spectrum of Taxim-AZ and Taxim-of in the presence of Fe(III) metal ion

Taxim-AZ & Taxim-of concentrations are varied by keeping Fe(III) ion concentration constant

$$p^H=4 \quad [Fe(III)] = 1 \times 10^{-4}M$$

[Taxim-AZ]	{	a, f) 0.5ml of taxim-AZ and taxim-of each
&		b, g) 1.0ml of taxim-AZ and taxim-of each
=		c, h) 1.5ml of taxim-AZ and taxim-of each
[Taxim-of]		d, i) 2.0ml of taxim-AZ and taxim-of each
		e, j) 2.5ml of taxim-AZ and taxim-of each

VI. CONCLUSION

The developed spectrophotometric methods for the determination of Taxim-AZ and Taxim-of are simple, specific, accurate, precise, rapid and economical. It is concluded that derivative spectrophotometry is successfully utilized for the determination of Taxim-AZ and Taxim-of by using Fe(III) by the present method.

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