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ORIGINAL RESEARCH ARTICLE

Visible Spectrophotometric Estimation of Tenoxicam from Tablets.

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ABSTRACT

A simple, Precise, accurate, fast and economical methods have been developed for the quantitative estimation of Tenoxicam from tablet formulation using Ferric chloride and 1, 10 phenanthroline. Tenoxicam forms a red colored chromogen with the reagent, which shows absorbance maxima at 490.5 nm and linearity in the concentration range of 8-40 µg/ml of drug. The results of analysis for the methods were validated statistically and by recovery studies.

Key Words: Ferric chloride, 1, 10 phenanthroline, Tenoxicam.

INTRODUCTION

Tenoxicam chemically 4-hydroxy-2-methyl-n-(pyridinyl-2-yl)-2h-thieno [2, 3-e]-1, 2-thiazine-3-carboxamide 1, 1-dioxide, is a Non steroidal anti inflamattery drug [1]. It is used to relieve inflammation, swelling, stiffness, and pain associated with rheumatoid arthritis, osteoarthritis, ankylosing spondylitis .It is official in BP [2].

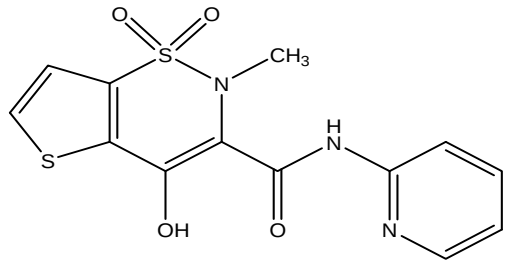

Fig. 1: Structure of Tenoxicam

Literature survey reveals LC-MS [3], HPLC [4-10], spectrophotometric [10-15] methods for the estimation of Tenoxicam from pharmaceutical formulation. A Shimdzu double beam UV/Vis spectrophotometer model 1700 with 1 cm matched quartz cells was used for absorbance measurement.

EXPERIMENTAL

Preparation of reagent and solution

(i) 1, 10 phenanthroline reagent: 1, 10 phenanthroline. Solution (1% w/v) was prepared in methanol**.**

(ii) Ferric chloride solution: Ferric chloride (1%w/v) solution was freshly prepared in double distilled water.

Preparation of standard solution

Accurately weighed drug (10 mg) was transferred in 100 ml volumetric flask, dissolved in 50 ml of methanol and diluted with same. The final solution contained 100 µg/ ml of the solution.

Procedure for calibration curve

In a series of 25 ml volumetric flasks, aliquots of standard drug solution (100 µg/ml) containing 2-10 ml of standard drug solution in methanol were transferred so as to give several dilutions in the concentration range of 8-40µg/ml of tenoxicam to each flask 1 ml of ferric chloride and 1.5 ml of 1, 10 phenanthroline were added. The flasks were heated on a boiling water bath for 15 minutes, cooled to room temperature and the total volume was brought up to the mark with methanol. The absorbance of red colored complex was measured at 490.5 nm against a reagent blank and a calibration curve was plotted between concentration of tenoxicam and measured absorbance.

Procedure of analysis for tablet formulations

For analysis of tablet formulation, twenty tablets of tenoxicam were weighed accurately and finely powdered. An accurately weighed portion of powdered sample, equivalent to 10 mg of

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tenoxicam was taken in a 100 ml volumetric flask containing 40 ml of methanol, sonicated for 20 minutes. The resultant was filtered through Whatman filter paper No. 41 into another 100 ml volumetric flask. The filter paper was washed several times with methanol. The washings were added to the filtrate and the final volume was made up to the mark with methanol. Two milliliters filtrate of the sample solution was diluted to 10 ml with methanol and treated as per the procedure of the calibration curve and amount of drug present in sample was computed from respective calibration curve. The procedure of analysis was repeated five times with two different tablet formulations. Results of analysis are reported in **Table 1**

Table 1: Results of analysis of commercial formulations

Brand	Labeled amount (mg/tab.)	Label claim estimated*		Standard Deviation	Relative Standard Deviation	Coefficient of variance
		mg	%			
1	20	19.75	98.20	0.6938	0.0070	0.7012
2	20	19.84	99.60	0.2029	0.0020	0.2024

** Each value is an average of five estimations*

Recovery Studies

Recovery studies were carried out for the method by the addition of known amount of standard drug solution of tenoxicam to pre-analyzed tablet sample solution at three different concentration levels. The resulting solutions were analyzed by proposed method. The results of recovery studies were found to be satisfactory and are reported in **Table 2.**

Table 2: Results of recovery studies

Brand	Labeled amount (mg/tab.)	Amount added to finaldilution (µg/ml)	Amount recovered (µg/ml)	Percentage recovery
		5	4.92	98.40
1	20	10	9.96	99.6
		15	14.76	98.4
		5	5.01	100.01
2	20	10	10.04	100.4
		15	15.04	100.26

RESULTS AND DISCUSSION

In present research work one colorimetric method have been developed for determination of tenoxicam from its tablet formulations. The developed colorimetric methods are based on formation of colored complex of drug with coloring reagents.Developed method is based on reaction of drug with ferric chloride and 1-10 phenanthroline. The formed complex was found to be most stable when drug solution was prepared in methanol. Percentage label claim of tablet formulation using this method was found to be in the range of 98.20-99.60% and standard deviation was in the range of 0.202- 0.692 for two different batches of tablet formulation of tenoxicam.Recovery studies were carried out by the addition of known amount of standard drug solution of tenoxicam to pre-analyzed tablet sample solution at three different concentration level for developed methods and results of recovery studies were found to be satisfactory.The developed colorimetric methods can be used with any model of spectrophotometer or colorimeter and does not require sophisticated recording spectrophotometer these methods were found to be simple, accurate and economical.

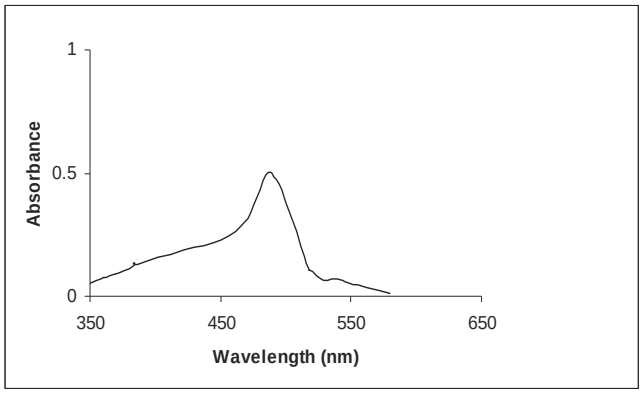

Fig. 2 UV spectra of tenoxicam with 1-10 phenanthroline reagents

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