



SPECTROPHOTOMETRIC METHOD FOR FAMOTIDINE RAPIDLY DISINTEGRATING TABLET

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ABSTRACT

A simple spectrophotometric method for determination of famotidine from rapidly disintegrating tablets was performed. The maximum absorbance was measured at 286 nm against distilled water blank. Beer's law was obeyed in the range of 5-40 µg/ml.

Keywords: Famotidine, Spectroscopy, UV.Visible spectrophotometer

1. INTRODUCTION

Famotidine, chemically 3-[[[(2-aminoiminomethyl) amino-] 4-thiazolyl] methyl] thio]-N-(aminosulfonyl) propaninidamide¹ is used in the treatment of duodenal ulcer, gastric ulcer, stress ulcers and gastritis. Various spectrophotometric methods have been reported for estimation of famotidine².

In the present communication, a simple spectrophotometric method has been developed for the estimation of famotidine from pharmaceutical preparations. The maximum absorbance was measured at 286 nm. The proposed method has not been studied earlier for estimation of famotidine in tablets.

2. Materials and Methods

All spectrophotometric measurements were made using UV Varian Cary 100 scan - EL 08053091 model with a spectral bandwidth (resolution) of 0.1nm and wavelength accuracy (with automatic wavelength correction) of 0.5 nm. An ultrasonicator was used for proper dissolution of the samples.

Famotidine was gifted by Piramal Healthcare Limited. All analytical grade chemicals were used, and all the solutions were freshly prepared with double-distilled water.

25 milligrams of pure famotidine was dissolved in 10ml water and heated to 37.5° C till it dissolved, then diluted to 25 ml with water. This stock solution was further diluted to get the desirable working concentration of 100 µg /ml.

The following procedure has been adopted for obtaining the standard curve (Fig. 1). An aliquot each of 1.0, 2.0, 3.0, 4.0, and 5.0 ml of the drug solution was transferred into a series of 10 ml standard flasks. To each flask, 3.0 ml of distilled water was added and sonicated and

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volume was made up with distilled water. The solution formed was measured at 286 nm against distilled water as blank. The calibration curve (Fig. 2) was obtained by plotting absorbance values against amount of standard drug in $\mu\text{g/ml}$. The calibration curve was found to be linear over the concentration range of 10-50 $\mu\text{g/ml}$.

Tablets were weighed, powdered and the contents well mixed; and powder equivalent to

25 mg of famotidine was dissolved in methanol, filtered, and the residue was washed with distilled water and the volume was adjusted to 25 ml with distilled water. Further analysis was carried out as per the procedure described under calibration curve, and the amount of famotidine present in the sample was estimated by calculation. The results are tabulated in Table 1.

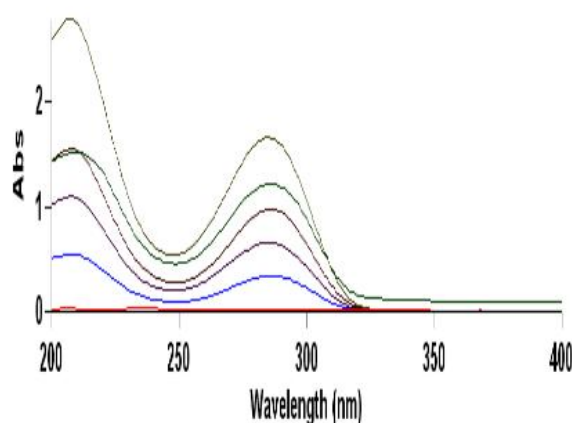


Fig. 1: Determination of λ_{max} of Famotidine

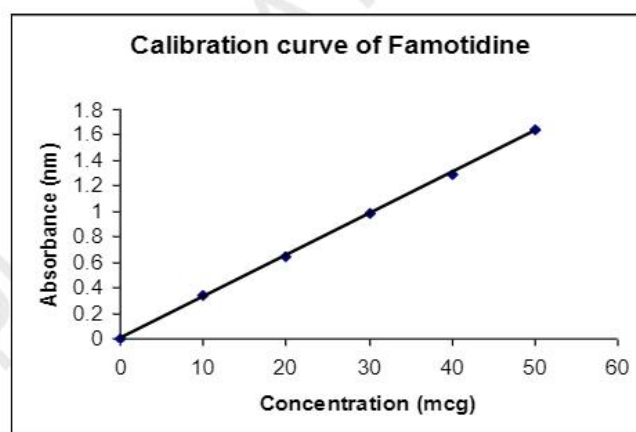


Fig. 2: Calibration Curve of Famotidine

Table 1 Assay Method Study

	Amount of Drug ($\mu\text{g/ml}$)	Absorbance			Average Absorbance	Avg %assay	% RSD
		1	2	3			
Standard	20	0.753	0.779	0.758	0.763	-	1.25
Sample	20	0.762	0.758	0.763	0.761	99.73	0.98
Marketed	20	0.789	0.776	0.762	0.775	101.57	1.56

In order to study the accuracy and suitability of the proposed method, known quantities of famotidine were added to the previously analyzed samples

and the same mixtures were reanalyzed by the proposed method. The results are tabulated in Table 2.

Table 2 Recovery of Famotidine

Recovery Level	Labeled Amount ($\mu\text{g/ml}$)	Spiked Amount ($\mu\text{g/ml}$)	Absorbance	% Recovery	% RSD
80	20	16	0.6781	98.35	1.25
100	20	20	0.7591	98.95	1.47
120	20	24	0.838	99.70	1.36

3. Results and Discussion

The present study was carried out to develop a simple, rapid, precise and reproducible spectrophotometric method for the estimation of famotidine in pharmaceutical formulations. The method shows % assay and % recoveries between are 99.00-101.00 and 90.00-110.00 respectively. The calibration curve was found to be linear over the concentration range of 10-50 $\mu\text{g/ml}$. The proposed method can be preferred for routine analysis of estimation of famotidine in bulk drug samples and from pharmaceutical preparations.

Acknowledgements

The authors are thankful to Piramal Healthcare Limited for providing us the reference standard of Famotidine and to

MAEER's Maharashtra Institute of Pharmacy, Pune for providing us the instruments and facilities.

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Source of support: Nil, Conflict of interest: None Declared