CODEN [USA]: IAJPBB ISSN: 2349-7750

INDO AMERICAN JOURNAL OF
PHARMACEUTICAL SCIENCES

http://doi.org/10.5281/zenodo.1135267

Available online at: http://www.iajps.com Research Article

DEVELOPMENT OF UV SPECTROPHOTOMETRIC METHOD FOR ESTIMATION OF SERATRODAST IN BULK AND PHARMACEUTICAL FORMULATIONS

Naveen Kumar G S*, Harish K H, Hanumanthachar Joshi

Sarada Vilas College of Pharmacy, K. M. Puram, Mysuru, India.

Abstract:

A simple UV spectrophotometric method has been developed for the estimation of Seratrodast pure form and pharmaceutical formulation. Seratrodast in bulk drug and pharmaceutical formulation and has an absorption maximum at 285nm in methanol. It obeys Beer's law in the concentration range of 20 -100 µg/ml. The method was measured at its appropriate λ_{max} against the reagent blank. The developed method was found to be precise, accurate and reproducible.

Keywords: *Beer's law, Seratrodast, methanol and UV spectrophotometry*

***Corresponding author:**

Naveen Kumar G.S,
Sarada Vilas College of Pharmacy,
K. M. Puram, Mysuru,
India
Email: naveengs.2010@gmail.com,

QR code

Please cite this article in press as Naveen Kumar G.S et al.,
Development of UV Spectrophotometric Method for Estimation of Seratrodastin Bulk and Pharmaceutical Formulations, *Indo Am. J. P. Sci, 2018; 05(01).*

INTRODUCTION:

Seratrodast is a thromboxane A_2 (TXA2) receptor (TP receptor) antagonist used primarily in the treatment of asthma. Chemically it is 7-phenyl-7-(2, 4, 5-trimethyl-3,6 dioxocyclohexa-1,4- dien-1-yl) heptatonic acid. It was the first TP receptor antagonist that was developed as an anti-asthmatic drug which does not affect thrombus formation thus ruling out any action on blood coagulation. Literature review reveled that only HPLC method was developed for determination of this drug in pharmaceutical formulations [1-4]. Hence it was thought worthwhile to develop UV spectrophotometric method for the same. This paper describes simple and sensitive UV spectrophotometric method has been developed for the quantitative estimation of Seratrodast.

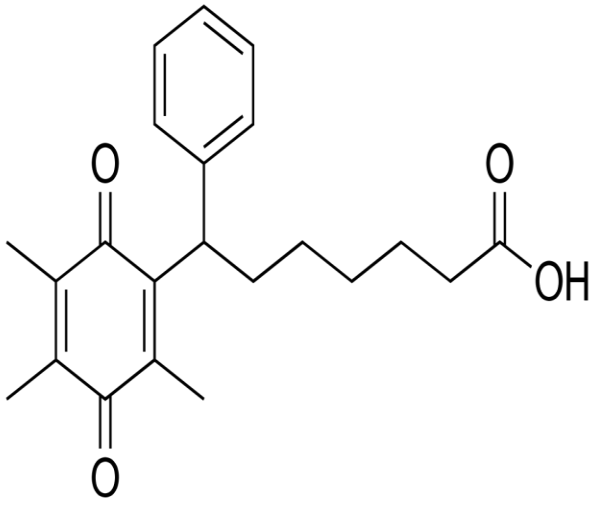

Fig1: Structure of Seratrodast

MATERIALS AND METHODS:

Instrument

Shimadzu UV/visible double beam spectrophotometer (model 2450) with 1cm matched quartz cells were used for all the spectral measurements.

Materials and methods

All chemicals used were of analytical reagent grade. Seartrodast was obtained as a gift sample from Zuventus Healthcare Ltd, Mumbai and formulation purchased from the local market. Seratrodast is the commercial tablet formulation labelled to contain 80 mg per tablet.

Experimental methods

Preparation of Standard stock solution

Standard solution of seratrodast (1 mg/ml) was prepared by dissolving 100 mg of drug in 100 ml of methanol. Different aliquots were taken from stock standard in a series of 10 ml volumetric flask and the volume was made up with methanol to get concentration of 20 -100 µg/ml.one of the above solutions was scanned on UV range using methanol as a blank and wavelength of maximum absorption was found to about 285nm. The absorption maxima of solutions in different concentrations were measured at 285nm using methanol as a blank. Calibration curve were plotted between absorbance vs. concentration.

Preparation of tablet formulation

In case of tablet formulation, one brand of commercially available tablets was analysed by the proposed method. For formulation analysis, twenty tablets of Seratrodast each containing 80 mg of the drug. Tablets powder equivalent to 100 mg of sertrodast, was taken into 100ml volumetric flask and volume was made up with methanol.

RESULTS AND DISCUSSION:

The optical characteristics such as absorption maxima, Beer's law limits, molar absorptivity and Sandell's sensitivity are presented in Table 1. The regression analysis using method of least squares was made for the slope (b), intercept (a) and correlation (r) obtained from different concentrations and the results are summarized in Table 1. The percent relative standard deviation and percent range of error (0.05 and 0.01 level of confidence limits) calculated from the eight measurements at ¾ of the upper Beer's law limits of seratrodast are shown in Table 1. The results analysis of tablet formulation is shown in Table2 and maximum wavelength showing in Fig2. The calibration curve is shown in Fig3. The results showed that this method have reasonable precision. To evaluate the reproducibility of the method, known amounts of pure drug were add to the previously analysed pharmaceutical preparation and the method was employed for routine quality control of seratrodast and its dose formulations and was analysed by the proposed method. The percent recoveries are given in Table 2. Interference studies revealed that the common excipients and other additives are usually present in the tablet dosage form did not interfered at their regularly added levels.

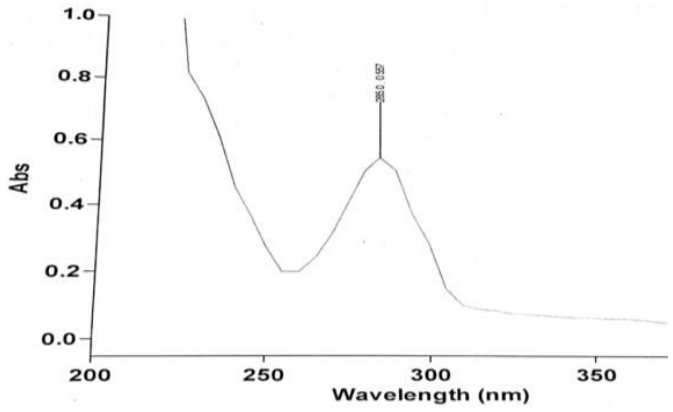

Fig.2: Maximum wavelength of Seratrodast

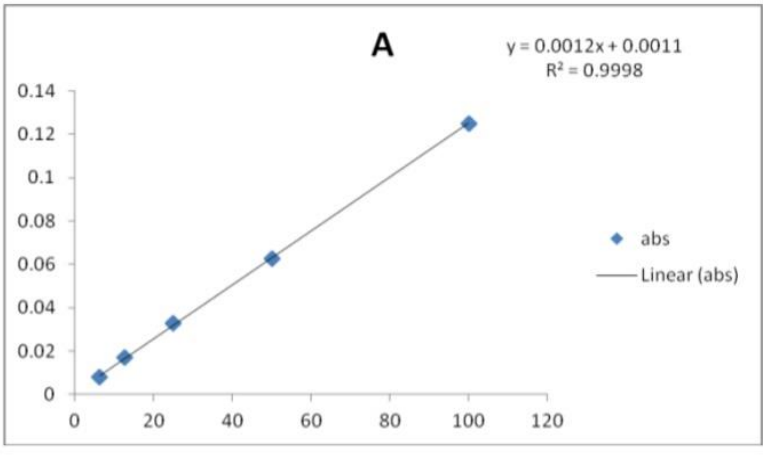

Fig.3: Calibration curve of Seratrodast

Table1: Optical characteristics, precision and accuracy of the proposed method.

Parameter	UV Method
λ_{max} (nm)	285
Beer's law limits (µg/ml)(C)	20-100
Molar absorptivity (L mol^{-1} cm^{-1})	2.0×10^3
Sandell's sensitivity (µg/ml – 0.001 absorbance unit)	0.0187
Regressionequation (Y*)	
Slope (b)	0.0532
Intercept (a)	0.0047
Correlation coefficient(r)	0.9992
% RSD	0.941
Range of errors**	
Confidence limits with 0.05 level	0.0043
Confidence limits with 0.01 level	0.0065
Limit of detection (LOD)	0.34
Limit of Quantitation (LOQ)	0.91

- Y = bC + a where C is the concentration of Seratrodast in µg/ml and Y is the absorbance at the respective λmax.
- ** For eight measurements.

Table2: Analysis of Tablet formulation

Samples (Tablet)	Labelled amount (mg)	Amount obtained (mg)*Proposed Method	%Recovery** Proposed Method
Seretra-80	80	7.95	99.89

* Mean ±s.d. of eight determinations.

CONCLUSION:

The proposed method was found to be simple, sensitive, selective, accurate, precise and economical. In conclusion the UV spectrophotometric methods are more accurate and can be used in the determination of Seratrodast in bulk drug and its pharmaceutical formulations in a routine manner.

ACKNOWLEDGEMENT

The authors are thankful to The Management, Sarada Vilas College of pharmacy for their kind help and providing necessary facilities.

REFERENCES:

1.Anon Chronic Respiratory Diseases, In J.Bousquet and N. Khaltaev (Eds), Global surveillance, prevention and control of chronic respiratory diseases, A comprehensive approach. WHO library Publication, 2007: 723-745.

2.Endo S and Akiyama K; Nippon Rinsho– Khaltaev (Eds). Global surveillance, prevention and control of chronic respiratory diseases, a comprehensive approach. WHO Khaltaev (Eds). Global surveillance, prevention and control ofchronic respiratory diseases, a comprehensive approach. WHO library Publication, 2007: 54 (11) 3045.

3.E Samara, G Cao, C Locke. Population analysis of the pharmacokinetics and pharmacodynamics of Seratrodast in patients with mild to moderate asthma. Clin Pharmacol,1997; (62): 426-435.

4.R Ohta, T Amano, K Yamashita, M Motohashi., Highperformance liquid chromatographic determination of seratrodast and its metabolites in human serum and urine. Journal of chromatography B: Biomedical sciences and its applications, 1997;704(1-2): 325-331.