Asian Journal of Chemistry Vol. 19, No. 2 (2007), 1611-1612

NOTE

UV Spectrophotometric Determination of Tamsulosin Hydrochloride

D. GOWRI SANKAR*, B. DURVASA RAO, V. SAI KISHORE† and T.E.G.K. MURTHY†
Department of Pharmaceutical Sciences, Andhra University
Visakhapatnam-530 003, India
E-mail: gowrisankar97@rediffmail.com

A UV spectrophotometric method has been developed for the determination of tamsulosin hydrochloride in pure form and pharmaceutical formulations. This method obyes Beer's law in the concentration range 30-80 μg/mL and exhibiting maximum absorption at 282 nm. This method was extended to pharmaceutical formulations and there is no interference of additives and excepients.

Key Words: UV determination, Tamsulosin hydrochloride.

Tamsulosin is chemically 5(2-((-(2-ethoxy phenoxy)ethyl)amino)-propyl)-2-methoxy benzene sulfonamide[1]. It is selective alpha adrenoreceptor blocking agent. These alpha 1 adrenoreceptors most abundant in the prostate, prostatic capsule and bladder neck. Blockade of these adrenoreceptors can cause reduction of prostatic hyperplasia symptoms. An *in vitro* study revealed that the selectivity of this drug to prostate alpha 1 receptors was about 10 times higher than to aorta alphal adrenoreceptors[2,3]. A literature survey reveals the reports of HPLC[4,5], LCMS[6,7] methods for the estimation of tamsulosine hydrochloride in pharmaceutical dosage forms and in biological fluids. No Spectrophotometric method has been reported for the estimation of tamsulosin. The authors have developed simple, accurate and reliable UV spectrophotometric method for the estimation of tamsulosin in pure as well as in pharmceutical dosage forms.

All the chemicals used were of analytical grade. Spectral and absorbance measurements were made on Elico SL 159 UV-vis spectrophotometer with 1 cm match quartz cells.

Perparation of standard and sample solution

Accurately weighed 100 mg of tamsulosin hydrochloride was dissolved in 100 mL of methanol. The stock solution was further diluted with methanol to obtain a working standard solution of 100 μg/mL.

An accurately weighed tablet powder of tamsulosin hydrochloride equivalent to 25 mg of drug was dissolved in 25 mL of methanol and filtered, it give 1 mg/mL solution, which is further diluted with methanol to obtain 100 μg/mL solution.

†Bapatla College of Pharmacy, Bapatla, India.

The optical characteristics such as Beer's law limits, Sandell's sensitivity, molar extinction coefficient, per cent relative standard deviation, (calculated from the eight measurements containing 3/4th of the amount of the upper Beer's law limits), regression equation, correlation coefficients, % range of error (0.05 and 0.01 confidence limits) were calculated and the results are summarized in Table 1.

TABLE-1
OPTICAL CHARACTERISTICS AND PRECISION OF THE PROPOSED METHODS

Parameter	Value	Parameter	Value
λ_{max} (nm)	282	Intercept (a)	0.000800
Beer's law limit (μg/mL)	30-80	Correlation coefficient (r)	0.999100
Molar absorptivity (L $mol^{-1}cm^{-1}$)	4.3×10^3	Relative standard deviation (%)*	0.056000
Sandell's sensitivity	0.2083	(%) Range of error	
(μg cm^{-2}/0.001 absorbance unit)		(confidence limits)*	
Regression equation		0.05 level	0.046200
(Y = a + bC) slope (b)	0.0096	0.01 level	0.069279

*Average of eight determinations

To evaluate validity and reproducibility of the methods, known amounts of pure drug were added to previously analyzed pharmaceutical preparations and the mixtuers were analyzed by the proposed methods and the results are presented in Table 2. Interference studies revealed that the common excepients and additives did not interfere. Hence the method is most economic, simple, sensitive and accurate and can be used for the routine dermination of tamsulosin in bulk form as well as in pharmaceutical preparations.

TABLE-2
ESTIMATION OF TAMSULOSIN IN PHARMACEUTICAL FORMULATIONS

Sample	Labeled amount (mg)	Amount found (mg) Proposed method	Recovery (%)*
Tablet	0.4	0.398	98.50
Capsule	0.4	0.396	99.00

REFERENCES

1. P. Narayan and H.S. Tunguntla, *Rev. Urol.*, **7**, 542 (2005).
2. K. Kawabe, A. Veno, Y. Takimoto, Y. Aso and H. Kato, *J. Urol.*, **144**, 908 (1990).
3. G.M. Clifford and R.D. Farmer, *Eur. J. Urol.*, **38**, 2 (2000).
4. Y. Hassan, E. Aboul, F.H. Rajaa, A.R. Mahasen, Y. Ahmad, A.A. Wijdan and A.R. Sameer, *Liq. Chromatogr. Rel. Tech.*, **26**, 1109 (2003).
5. Q.I.M.-Ling, P. Wang, Y.-S. Yeng, J.-L. Gu, *Beijing Inst. Tech.*, **12**, 194 (2003).
6. H. Matsushima, K.I. Takanuki, H. Kamimura, T. Watanable and S. Higuchi, *J. Chromatogr. B. Biomed Sci. Appl.*, **695**, 317 (1997).
7. N.V.S. Ramakrishna, K.N.Vishwottam, S. Manoj, M. Koteshwara, S. Wishu and D.P. Varma, *Biomed. Chromatogr.*, **19**, 709 (2005).

(*Received*: 19 December 2005; *Accepted*: 20 September 2006) AJC-5147