Asian Journal of Chemistry Vol. 20, No. 3 (2008), 2473-2475

NOTE

Spectrophotometric Estimation of Drotaverine Hydrochloride from Tablets

A.A. SHIRKHEDKAR*, G.H. UPASANI and S.J. SURANA
Department of Pharmaceutical Chemistry, R.C. Patel College of Pharmacy
Karwand Naka, Shirpur-425 405, India
E-mail: atul_shirkhedkar@yahoo.com

A simple, rapid, accurate and precise UV-spectrophotometric method has been developed for the quantitative estimation of drotaverine hydrochloride in bulk and tablets. Proposed method involves quantitative estimation of drotaverine hydrochloride at 303 and 354 nm. The linearity was observed in the concentration range of 4 - 24 µg/mL at both the wavelengths. The % label claim was found to be in range of 99 - 99.7% at both the wavelengths. The results of analysis have been validated statistically and by recovery studies.

Key Words: UV-Spectrophotometric method, Drotaverine hydrochloride.

Drotaverine hydrochloride, 1-(3,4-diethoxybenzylidene)-6,7-diethoxy-1,2,3,4-tetrahydroisoquinoline is used as an antispasmodic agent[1]. Literature survey revealed UV-spectrophotometric[2], HPLC[3,4] and HPTLC[5] methods for estimation of drotaverine hydrochloride from pharmaceutical dosage form and biological fluids in combination with other drugs. Drotaverine hydrochloride is not official in IP, BP and USP. Present paper, describes simple UV-spectrophotometric method for estimation of drotaverine hydrochloride using dimethylformamide.

All the chemicals used were of analytical grade. Spectral and absorbance measurements were made on Shimadzu UV-Visible spectrophotometer 2450 with 10 mm quartz cells.

Preparation of standard solution: Accurately weighed 10 mg of drotaverine hydrochloride was transferred into 100 mL volumetric flask and dissolved in DMF to give stock solution of 100 µg/mL. From this stock solution, working standard solutions of drug (4-24 µg/mL) were prepared by appropriate dilutions with distilled water. Working standard solutions were scanned in the UV a range of 200-400 nm. The absorbances were recorded at 303 and 354 nm against blank. Optical characteristics and results of regression equation are summarized in Table-1.

TABLE-1
OPTICAL CHARACTERISTICS AND STASTISTICAL DATA OF REGRESSION EQUATION

Parameters	At 303 nm	At 354 nm
Beer's law limit (µg/mL)	4-24	4-24
Regression equation (Y = mx + C)	Y = 0.0352x + 0.0044	Y = 0.01952x + 0.002
Molar extinction coefficient (L mol^{-1} cm^{-1})*	1.15×10^4	0.98×10^4
Slope	0.0352	0.01952
Intercept	0.0044	0.002
E 1 %, 1 cm	267	224
Correlation coefficient (r)	0.9999	0.9996

*Average of six determinations

Preparation of sample solution: 20 Tablets were accurately weighed and ground to fine powder. A quantity equivalent to 40 mg of drotaverine hydrochloride was transferred into 100 mL volumetric flask; 20 mL of DMF was added and sonicated for 10 min. The solution was filtered through Whatmann filter paper no. 41 and the volume was made upto the mark using same solvent. This solution was further diluted with distilled water to get an appropriate working standard solution. The absorbances were recorded at both the wavelengths and the results are summarized in Table-2.

TABLE-2
RESULTS OF ASSAY

Wavelength	303 nm			354 nm		
	Amount found (mg/tab)	Label claim* (%)	RSD (%)	Amount found (mg/tab)	Label claim* (%)	RSD (%)
40	39.6	99	1.6	39.9	99.7	1.4

*Average of six determinations

Recovery studies: To evaluate validity and reproducibility of the method, recovery studies were carried out by adding known amount of drug to preanalyzed sample at three different levels. The absorbances were recored at both the wavelengths and the percentage recoveries were calculated; the results are summarized in Table-3.

TABLE-3
RESULTS OF RECOVERY STUDIES

Concentration added (mcg/mL)	At 303 nm		
	*Amount recovered (mcg/mL)	Recovered (%)	RSD (%)
8	8.06	100.7	1.5
10	10.10	101.0	1.7
12	11.90	99.1	1.6
	At 354 nm		
8	8.1	100	1.2
10	9.9	99	1.3
12	12.1	101	1.5

*Average of three determinations at each level.

ACKNOWLEDGEMENT

The authors are thankful to Vishnu Chemicals Ltd., Hyderabad, India, for providing gift sample of drotaverine hydrochloride.

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(*Received*: 22 March 2007; *Accepted*: 17 December 2007) AJC-6134