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Spectrophotometric Determination of Famciclovir and Racecodotril Using 2, 6-Dichloroquinone–Chlorimide

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Abstract: A simple, sensitive spectrophotometric method for the determination of Famciclovir and Racecodotril is developed. It is based on the formation of a colored oxidative coupling product between 2,6-dichloroquinone-chlorimide and the drug is described. The method has been extended to pharmaceutical preparations. The absorption maxima and Beer's law limits for Famciclovir are 500 nm, 20-100 µg/ml and for Racecodotril are 460 nm, 12.5-62.5 µg/ml .

Keywords: Spectrophotometric, Famciclovir, Racecodotril and 2,6–dichloroquinone chlorimide.

Introduction

Famciclovir (FCV)[1-2] is an anti viral drug and is chemically 1,3 – propanediol , 2 – [2 –(2 amino – 9H – purin – 9 –yl)ethyl] - ,diacetate (ester). Racecodotril (RCD) is an anti-diarrhoeal drug and chemically it is glycine , N – [2 – [(acetyl thio)methyl] – 1- oxo-3- phenyl propyl] – phenyl methyl ester Literature survey reveals that no visible methods are reported for the estimation of FCV and a HPLC method is reported for RCD[3].The present investigation has been undertaken to develop simple, accurate and reliable spectrophotometric method for the estimation of FCV and RCD in pure as well as in pharmaceutical dosage forms.

Experimental

Instrumentation

Spectral and absorbance measurements were made on Systronics UV-Visible spectrophotometer- 117 with 10 mm matched quartz cells.

Chemicals and reagents

All the chemicals used were of analytical grade. Famciclovir and Racecodotril were gift samples from Cipla Labs,Bombay, India and Dr.Reddy's Laboratories, Hyderabad, India.Tablets of Famciclovir[FAMTREX- 250 mg (Cipla)] and capsules of Racecodotril[REDOTIL-100mg (Dr.Reddy's)] were purchased from local market. 2,6-dichloroquinone-chlorimide(0.4%):400 mg of 2,6-dichloroquinone-chlorimide was dissolved in 100 ml of isopropanol.

Preparation of standard solutions

Accurately weighed 100 mg of FCV or RCD was dissolved in 100 ml of distilled water or methanol and the solutions were diluted with distilled water or methanol to obtain a final concentration of 400 µg/ml for FCV of 250 µg/ml for RCD.

Preparation of sample solutions

An accurately weighed amount of tablet powder of FCV equivalent to 100 mg was dissolved in 100 ml of distilled water and filtered. This solution was further diluted with distilled water so as to obtain a concentration of 400 µg/ml. Accurately weighed amount of capsule powder of RCD equivalent to 100 mg was dissolved in 100 ml of methanol and filtered. This solution was further diluted with methanol so as to obtain a concentration of 250 µg/ml.

Assay procedure

Aliquots of solution 0.5 to 2.5 ml (400 µg/ml for FCV or 250 µg/ml for RCD) were transferred into a series of 10 ml graduated tubes, 1.0 ml of DCQC for FCV or 1.5 ml of DCQC for RCD was added to each tube and heated on boiling water bath for 20 min, cooled and made up to the volume with distilled water. The absorbance was measured at 500 nm for FCV or 460 nm for RCD against a reagent blank. The amount of FCV and RCD present in the sample solution was computed from its calibration curve.

Results and Discussion

The optical characteristics such as Beer's law limits, molar absorptivity, Sandell's sensitivity are presented in Table–1.The regression analysis was made for the slope (a), intercept (b) and correlation coefficient (r) and the results are summarized in Table-1.The percent relative standard deviation and percent range of error (0.05 and 0.01 confidence limits) are given in Table-1. The results showed that the method have reasonable precision.

The accuracy of the method was ascertained by comparing the results obtained with the proposed and reference methods[R] in the case of formulations and are presented in Table-2.As an additional check of accuracy of the method, recovery experiments were performed by adding known amounts of pure drug to pre-analysed formulations and percentage recovery values obtained are given in Table-2.Recovery experiments indicated the absence of interferences from the commonly encountered pharmaceutical additives and excepients.

Thus the proposed method is simple and selective with reasonable precision and accuracy and can be employed for the routine determination of FCV and RCD in quality control analysis.

Table 1. Optical characteristics and precision of the proposed methods

Parameters	FCV	RCD
λ_{max} (nm)	500	460
Beer's law limit (µg/ml)	20-100	12.5-62.5
Molar absorptivity (l mole^{-1} cm^{-1})	2.57 x 10^3	4.31 x 10^3
Sandell's sensitivity (µg cm^{-2} / 0.001 absorbance unit)	0.125	0.0892
Regression equation (Y = a + bC)		
Slope (b)	0.0081	0.0112
Intercept (a)	0.00124	0.00376
Correlation coefficient (r)	0.9999	0.9997
Relative standard deviation (%)*	0.369	0.541
%Range of error (Confidence limits)*		
0.05 level	0.308	0.452
0.01 level	0.456	0.669

*Average of eight determinations
In Y =a + bC, Y is absorbance and C is concentration

Table 2 Assay and recovery of FCV and RCD in dosage forms

Name of the dosage form	Labeled amount (mg)	Content of drug found (mg)		%Recovery by proposed method**
		Proposed method	Reported method[4]	
Famciclovir				
Tablets I	250	249.88	250.22	99.95
Tablets II	250	249.90	250.06	99.96
Racecodotril				
Capsules I	100	99.99	100.03	99.99
Capsules II	100	99.89	99.98	99.89

** Recovery amount is the average of five determinations

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References

1. Diaz-Mitoma F, Sibbald R G, Shafran S D, Boon R and Saltzman R L. *J.Am. Med.Assoc.* 1998, **280**, 887.
2. Vere Hodge R A. *Antiviral Chem. Chemother.* 1993, **4**, 67.
3. Zhao, Zhu and Liu. Zhongguo Yaoxue Zazhi. 2001, **36**, 267.
4. Gowri Sankar D, Pawar A K M, Kalyan Sumanth S and Madhavi Latha P V. *Asian J.Chem.* 2005, **17,** 2043.