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NOTE

UV Spectrophotometric Determination of Famciclovir

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Two simple and sensitive UV spectrophotometric methods have been used for the quantitative estimation of famciclovir in bulk drug and its pharmaceutical formulations. Famciclovir in ethanol exhibits absorption maximum at 223 nm and in 0.1 N HCl at 225 nm. In both the cases, Beer's law is obeyed in the concentration range of 2-10 μg/mL. The methods are accurate, precise and economical. The methods are extended to pharmaceutical preparations. In both the methods, there is no interference from any common pharmaceutical additives and diluents. The results of analysis have been validated statistically and by recovery studies.

Key Words: Spectrophotometric determination, Famciclovir.

Famciclovir[1] (Fig. 1) is chemically 2-[2-(2-amino-9H-purin-9-y1)ethyl] trimethylene diacetate and used as antiviral drug[1-4]. This new generation antiviral drug is given by mouth in the treatment of herpes zoster and genital mucocutaneous herpes[2,5,6]. In present work, two simple, sensitive, accurate, precise and economical UV spectrophotometric methods in ethanol and HCl have been developed for quantitative estimation of famciclovir in bulk drug and pharmaceutical formulations (tablets).

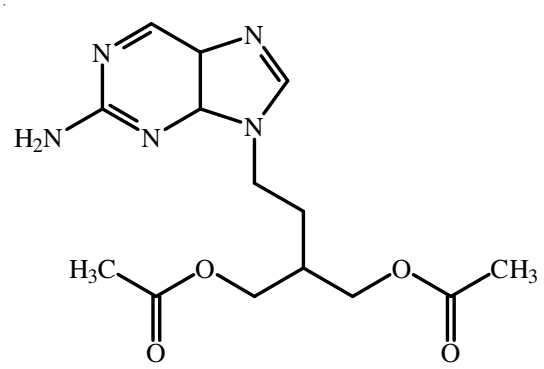

Fig. 1.

All spectral measurements were made on Systronics 119 UV-Visible spectrophotometer.

100 mg of famciclovir pure or equivalent formulation (tablets) was accurately weighed and dissolved in 20 mL of ethanol or 0.1 N HCl in a 100 mL volumetric flask and diluted up to the mark with ethanol or 0.1 N HCl (1 mg/mL). The final concentration of famciclovir was brought to 100 µg/mL with ethanol or 0.1 N HCl. Aliquots of famciclovir ranging from 0.2-1.0 mL (1 mL = 100 µg) were transferred into a series of 10 mL volumetric flasks and diluted to the mark with ethanol or 0.1 N HCl. The absorbance of the solutions was measured at 223 nm (ethanol) or 225 nm (0.1 N HCl) against solvent blank. The amount of famciclovir in the sample was computed from calibration curve. The optical characteristics such as absorption maximum, Beer's law limits, molar absorptivity and Sandell's sensitivity are presented in Table-1.

TABLE-1
OPTICAL CHARACTERISTICS AND PRECISION

Optical characteristics	Ethanol	0.1 N HCl
ε_{max} (nm)	223	225
Beer's law limits (µg/mL)	2-10	2-10
Molar absorptivity (L mol^{-1} cm^{-1})	3.323×10^4	2.968×10^4
Sandell's sensitivity (µg/cm^2-0.001)	0.021	0.016
Regression equation (Y*)		
Slope (b)	1.033×10^{-1}	0.919×10^{-1}
Intercept (a)	0.150×10^{-2}	0.030×10^{-2}
Correlation coefficient (r)	0.9998	1.005
RSD (%)	0.3236	0.452
Range of errors†		
Confidence limits with 0.05 level	± 0.0016	± 0.0020
Confidence limits with 0.001 level	± 0.0024	± 0.0030

Y = bC + a where C is the concentration of famciclovir in µg/mL and Y is the absorbance at the respective ε_{max}; †For eight measurements.

The regression analysis using the method of least squares was made for the slope (b), intercept (a) and correlation (r) obtained from different concentrations and results are summarized in Table-1. The per cent relative standard deviation and per cent range of error (0.05 and 0.01 level of confidence limits, calculated from the eight measurements (¾ of the upper Beer's law limits of famciclovir) are given in Table-1. Recovery experiments were done in the method by adding a known amount of drug to previously analyzed pharmaceutical preparations and also various excipients used in formulations. The results are given in Table-2.

The results obtained by proposed methods are in good agreement with the label claims (Table-2). The additives and excipients usually present in tablets do not interfere. The results indicate the proposed methods for quantitative estimation of famciclovir are simple, sensitive, accurate, precise and economical and can be used for the routine determination of famciclovir in bulk drug and pharmaceutical formulation.

TABLE-2
EVALUATION OF FAMCICLOVIR IN PHARMACEUTICAL FORMULATIONS

Sample*	Labelled amount (mg)	Amount obtained by proposed method		Percentage recovery†	
		Ethanol	HCl	Ethanol	HCl
T_1	250	249.6	249.3	99.86	99.53
T_2	250	249.4	249.2	99.82	99.64

*Tablets from different companies; †Average of eight determinations.

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