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NOTE

UV Spectrophotometric Determination of Famciclovir

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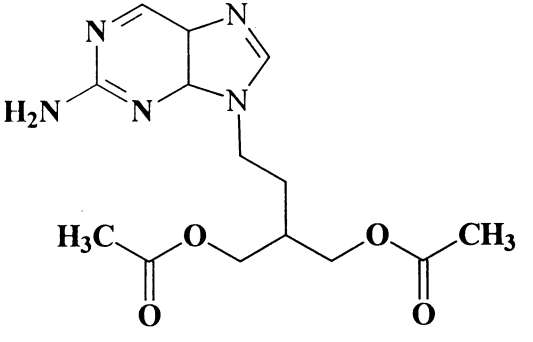
Two simple and sensitive UV spectrophotometric methods have been used for the quantitative estimation of famciclovir in bulk drug and its pharmaceutical formulations. Famciclovir in methanol exhibits absorption maximum at 219.2 nm and in water at 218 nm. In both the cases, Beer's law is obeyed in the 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] **(1)** is chemically 2-[2-(2-amino-9H-purin-9-yl)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 the present work, the authors have developed two simple, sensitive, accurate, precise and economical UV spectrophotometric methods in methanol and water for quantitative estimation of famciclovir in bulk drug and pharmaceutical formulations (tablets).



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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 methanol or water in a 100 mL volumetric flask and diluted up to the mark with methanol or water (1 mg/mL). The final concentration of famciclovir was brought to 100 μg/mL with methanol or water. 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 methanol or water. The absorbance of the solutions was measured at 219.2 nm (methanol) or 218 nm (water) 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

	Methanol	Water
λ_{max} (nm)	219.2	218
Beer's law limits (μg/mL (C))	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 absorption units)	0.021	0.016
Regression equation (Y*)		
Slope (b)	1.033×10^{-1}	0.919×10^{-1}
Intercept (a)	0.150×10^{-2}	0.03×10^{-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 0.01 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 λ_{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, 3/4 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.

TABLE-2
EVALUATION OF FAMCICLOVIR IN PHARMACEUTICAL FORMULATIONS

Sl. No.	Sample*	Labelled amount (mg)	Amount obtained by proposed method		Percentage recovery†	
			Methanol	Water	Methanol	Water
1.	T_1	250	249.6	249.3	99.86	99.53
2.	T_2	250	249.4	249.2	99.82	99.64

*Tablets from different companies
†Average of eight determinations.

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 that 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 formulations.

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