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NOTE

Spectrophotometric Estimation of Gliclazide in Pharmaceutical Dosage Forms

M. MATHRUSRI ANNAPURNA*, K.E.V. NAGOJI, S. SRINIVASA RAO and S.S. PATRO
Roland Institute of Pharmaceutical Sciences, Berhampur-760 010, India

Three simple and reproducible spectrophotometric methods have been developed for the estimation of gliclazide in pure and its dosage forms by using 0.1 N NaOH (method A), 0.1 N HCl (method B) and pH 7.4 phosphate buffer (method C). The maximum absorbance was observed at 226 nm, 230 nm and 226 nm in methods A, B and C respectively. Beer's law was obeyed in the concentration of 2.5–50 μg/mL, 5–60 μg/mL and 2.5–60 μg/mL in methods A, B and C respectively.

Key Words: Spectrophotometric estimation, Gliclazide, Pharmaceutical dosage.

Gliclazide[1] is chemically 1-(3-aza-bicyclo[3,3,0]oct-3-yl)-3-tolylsulphonylurea. It is a hypoglycemic agent used in the treatment of diabetes mellitus. A spectrophotometric method using Folin-Ceocalteu reagent[2] and a colorimetric method using cobalt chloride[3] were already reported. In the present study the authors have developed three simple, sensitive and reproducible methods for the estimation of gliclazide in pharmaceutical dosage forms.

An accurately weighed amount of gliclazide (pure and tablet powder) equivalent to 100 mg was dissolved in 10 mL of methanol and further dilutions were made with 0.1 N NaOH, 0.1 N HCl and pH 7.4 phosphate buffer in methods A, B and C respectively. A series of standard solutions containing 1.0–60 μg/mL, were prepared in 0.1 N NaOH, 0.1 N HCl and pH 7.4 phosphate buffer and their absorbances were measured at 226 nm, 230 nm and 226 nm respectively against reagent blank in methods A, B and C respectively. All the spectral measurements were made on ELICO SL 159 UV-Vis spectrophotometer.

Beer's law was obeyed in the concentration of 2.5–50 μg/mL, 5–60 μg/mL, 2.5–60 μg/mL in methods A, B and C respectively. The optical characteristics are summarized in Table-1. The values obtained in the determination of gliclazide in different pharmaceutical formulation (tablets) by the proposed methods are given in Table-2. To evaluate the validity and reproducibility of the three methods, known amounts of pure drug were added to the previously analyzed pharmaceutical preparations and the mixtures were analyzed by proposed methods and the per cent recoveries are given in Table-2.

TABLE-1
OPTICAL CHARACTERISTICS AND PRECISION

Parameters	Method A	Method B	Method C
Beer's law limits (μg/mL)	2.5–50	5–60	2.5–60
Molar extinction coefficient (L $mole^{-1}$ cm^{-1})	1.698×10^4	1.507×10^4	1.407×10^4
Sandell's sensitivity (μg/cm^2/0.001 absorbance unit)	0.0191	0.0215	0.0230
Regression coefficient (Y)*			
Slope (b)	0.0420	0.0438	0.0418
Intercept (a)	–0.0189	0.0479	0.0185
Correlation coefficient (r)	0.9988	0.9973	0.9987

Y* = a + bc where 'c' is concentration in μg/mL and Y is absorbance unit

TABLE-2
ESTIMATION OF GLICLAZIDE IN PHARMACEUTICAL FORMULATIONS

Sample	Labelled amount (mg)	Amount obtained (mg)			%Recovery by the proposed methods		
		Method A	Method B	Method C	Method A	Method B	Method C
1.	40	39.70	38.98	38.31	98.98	98.72	98.64
2.	40	39.92	37.49	37.32	99.32	99.63	98.78

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REFERENCES

1. Martindale, The Extra Pharmacopoeia, 28th Edn.
2. S. Raghuveer, AB. Avadhanulu and AR Pantulu, *Eastern Pharmacist*, **35**, 129, 135 (1992).
3. N. El Kousy and F. Asheer, *J. Drug Research*, **19**, 35 (1990).

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