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Research Article

UV SPECTROPHOTOMETRIC METHOD FOR IRBESARTAN

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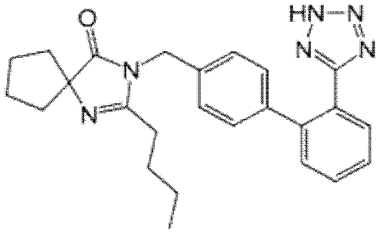
ABSTRACT

The U.V Spectrophotometric method is simple and sensitive method have been developed for the estimation of Irbesartan (IST) in pure and pharmaceutical dosage forms, using triple distilled water .These methods are based on the U.V Absorption λmax 270nm. The absorbance of the U.V Absorption is measured against the corresponding reagent blanks. This method have been statistically evaluated and found to be precise and accurate.

Keywords: Irbesartan, Spectrophotometric.

INTRODUCTION

Irbesartan(IST) is an angiotensin receptor II antagonist used mainly in the treatment of hypertension. IST is chemically called 2-butyl-3-({4-[2-(2H-1,2,3,4-tetrazol-5-yl)phenyl] phenyl} methyl)-1,3-diazaspiro[4.4]non-1-en-4-one.It is official in US Pharmacopoeia. Literature survey reveals that U.V spectrophotometric method by using triple distilled water have not been reported for its quantitative determination in its pure form and pharmaceutical formulations. In the present investigation the simple and sensitive U.V spectrophotometric method have been developed for the determination of IST. Beer's law is obeyed in the concentration ranges of 4 -12µg/ml. The results of analysis for this method have been validated statistically and by recovery studies.



Structure of Irbesartan

EXPERIMENTAL

1. **Standard drug solution:** About 100mg of Irbesartan was accurately weighed and dissolved in 100 ml of water to obtain a stock solution of 1 mg/ml. This solution was further diluted with distilled water to get working standard solution of 100 µg/ml.
2. The instrument used for this method is ELICO UV-Visible spectrophotometer, model ELS 163. It was employed with spectral bandwidth of 1 nm and wavelength accuracy of ± 0.3 nm with automatic wavelength corrections with a pair of 10 mm quartz cells.

PROCEDURE

The standard solution of IST ranging from 4 -12 ml were transferred into a series of 10ml volumetric flask. To these 1 ml of 0.1N Hcl solution were added. The total volume was make up with 10ml of triple distilled water. The contents were shaken for 2 minutes. Then the absorbance was measured at 270 nm against reagent blank and the amount of IST present in the sample solution was computed from its calibration curve.

RESULTS AND DISCUSSION

The optical characteristics such as beer's law limits, Sandell's sensitivity, molar extinction coefficient, percent relative standard deviation, percent range of error(0.05 and 0.01 confidence limits) were calculated for both the methods and results are summarized in Table 1. The values obtained for the determination of IST in Pharmaceutical formulations (Tablets) by the proposed methods are presented in Table 2. Studies reveal that the common excipients and other additives usually present in the Tablets did not interfere in the proposed methods.

Table 1: Optical characteristics, precision and accuracy of the proposed method

Parameters	Method A
λ_{max} (nm)	270
Beer's law limit(µg/mL)	4 – 12
Sandell's sensitivity(µg/cm^2/0.001 abs. unit	0.0369
Molar absorptivity(litre.mole^{-1}.cm^{-1})	5.33×10^3
Regression equation(Y*)	
Slope(b)	0.0299
Intercept(a)	0.075
Correlation coefficient(r)	0.9999
%Relative standard deviation**	1.093
%Range of error	
0.05 significance level	0.935
0.01 significance level	1.333

*Y = a + bx, where 'Y' is the absorbance and x is the concentration of Irbesartan in µg/mL
**For six replicates

Table 2: Estimation of Irbesartan in Pharmaceutical Formulations

Formulations (Tablets)	Labelled amount (mg)	Amount found* by proposed method	% recovery** by proposed method
Tablet 1	5	4.83	99.96
Tablet 2	5	4.85	99.69
Tablet 3	10	9.76	99.98
Tablet 4	10	9.85	99.89

***** Average of six determinations
******Recovery of amount added to the pharmaceutical formulation (Average of three determinations)

CONCLUSION

The proposed methods are applicable for the assay of drug IST and have an advantage of wider range under Beer's law limits. The proposed methods are simple, selective and reproducible and can be used in the routine determination of IST in pure form and formulations with reasonable precision and accuracy.

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