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NOTE

Colorimetric Methods for Estimation of Losartan Potassium from Tablet Formulation

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Two simple colorimetric methods have been developed for the estimation of Losartan potassium from tablet formulation. Developed methods are based on formation of ion pair complex of drug with dyes. The first developed method is based on formation of purple coloured complex of drug with bromocresol green. The coloured complex shows absorbance maxima at 612.4 nm and obeys Beer's law in the concentration range of 30–150 μg/mL of drug. The second developed method is based on the formation of coloured complex of drug with bromophenol blue which shows absorbance maxima at 607.0 nm and linearity in the concentration range of 20–200 μg/mL of drug. Results of analysis for both the methods were validated statistically and by recovery studies.

Key Words: Colorimetry, Losartan, Pharmaceutical formulation.

Losartan potassium, chemically 2-butyl-4-chloro-1[[2′-(1-H-tetrazol-5-yl){1,1′-biphenyl]-4-yl]methyl]-1H-imidazole-5-methanol is an anti-hypertensive agent[1]. Derivative UV spectroscopic[2], colorimetric[3] and HPLC[4] methods are reported for estimation of drug from solid dosage forms. For the estimation of losartan potassium from biological fluids, three HPLC[5–7] methods have been reported. An attempt has been made in the present study to develop two simple colorimetric methods for the analysis of losartan potassium from tablet formulation.

A Systronics UV-Visible recording spectrophotometer (model 2101) with 1 cm matched quartz cells was used for the present study. All reagents used were of analytical grade. Bromocresol green solution (0.1%) and bromophenol blue solution (0.1%) were prepared in double distilled water. Standard stock drug solution of Losartan potassium (500 μg/mL) was prepared in double distilled water.

Preparation of Calibration Curve

Method I: Standard stock solution of losartan potassium was diluted with distilled water to give several dilutions in the concentration range of 30–150 μg/mL of drug. To 10 mL of each dilution taken in a test tube, 10 mL of bromocresol green solution was added. The reaction mixture was shaken gently for 10 min and allowed to stand further for 10 min for formation of stable coloured complex. The absorbance was measured at 612.4 nm against reagent blank. A calibration curve was prepared. A representative spectra of complex is shown in Fig. 1.

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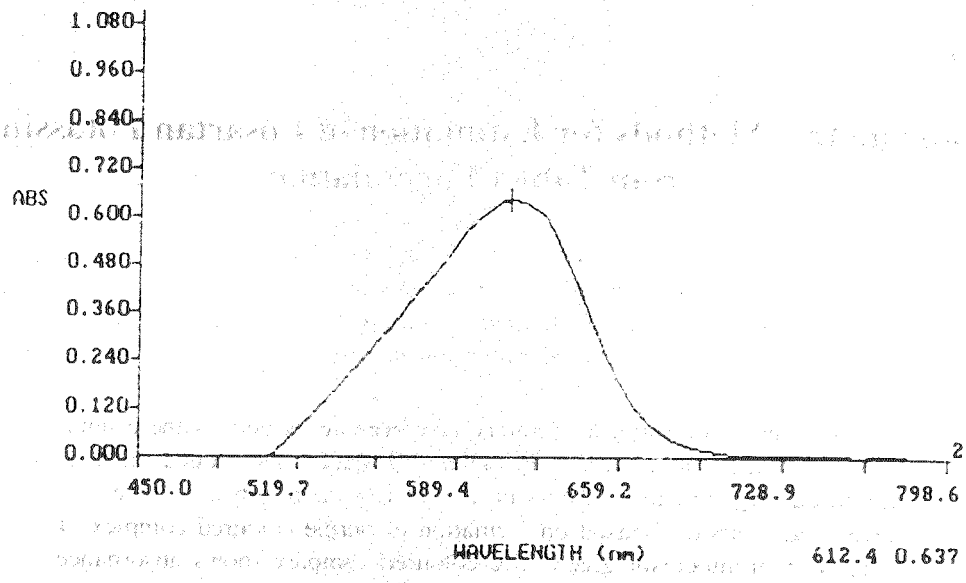

Fig. 1. Representative spectra of complex of losartan potassium with bromocresol green

Method II: Standard stock solution of losartan potassium was diluted with distilled water to give several dilutions in the concentration range of 20–200 µg/mL of drug. To 10 mL of each dilution taken in a test tube, 10 mL of bromophenol blue solution was added. The reaction mixture was shaken gently for 10 min and allowed to stand further for 10 min for formation of stable coloured complex.The absorbance was measured at 607 nm against reagent blank. A calibration curve was prepared. A representative spectrum of the complex is shown in Fig. 2.

Analysis of Formulation

Twenty tablets were accurately weighed and average weight of the tablet was determined. The tablets were powdered and powder equivalent to 50 mg of losartan potassium was accurately weighed and transferred to a 100 mL volumetric flask. Distilled water (75 mL) was added and shaken for 10 min to dissolve the drug. The solution was filtered through Whatman filter paper No. 41 into another 100 mL volumetric flask. The filter paper was washed with distilled water. The washings were added to the filtrate and the final volume was made with

TABLE-1
RESULTS OF ANALYSIS AND RECOVERY STUDIES

Method	Batch	Label claim (*mg*/tab)	Label claim estimated* (%)	S.D	Recovery† (%)
I (BCG)	a	25	99.10	0.259	99.08
	b	50	100.80	0.456	
II (BPB)	a	25	98.64	0.456	100.52
	b	50	98.90	0.278	

*Average of five determinations.
†Average of recovery studies at three different concentration levels.

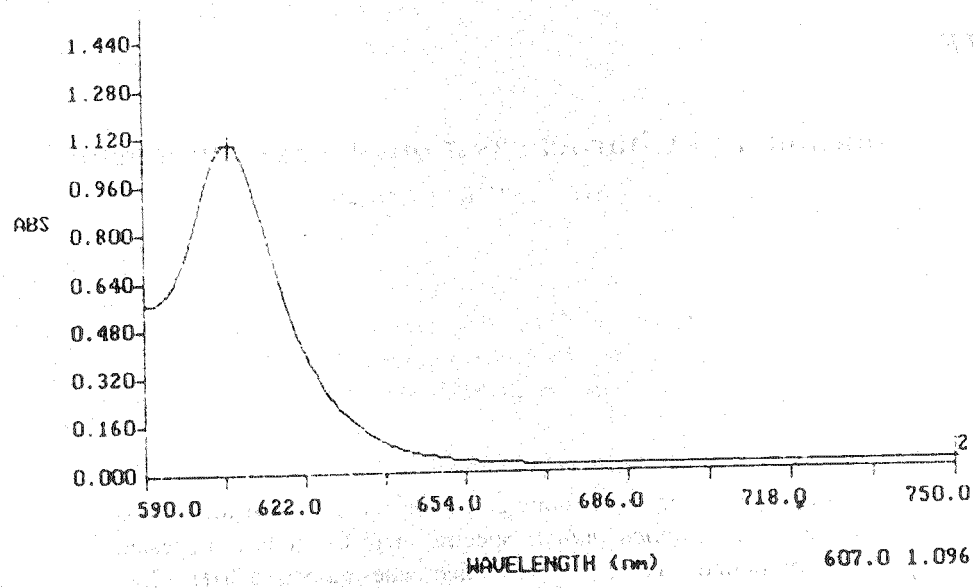

Fig. 2. Representative spectra of complex of losartan potassium with bromophenol blue

distilled water. 2 mL of filtrate was further diluted to 10 mL with distilled water. 10 mL of final dilution was taken in a test tube and treated as per procedure described for calibration curve (Methods I and II). Absorbance was measured at respective wavelength maxima and the concentration of drug in sample solution was determined from the respective calibration curves. The process of analysis was repeated five times. Results of analysis are reported in Table-1.

Recovery studies were carried out by addition of known quantities of standard drug solution to pre-anatysed sample at three different concentration levels and the determination was repeated for both the methods. Results of recovery studies are presented in Table 1.

The proposed methods are colorimetric methods for determination of losartan potassium from tablet dosage form. The methods are based on the formation of ion pair complex of drug with bromocresol green and bromophenol blue in distilled water. The methods are very simple and accurate. Reproducibility of the methods was checked by recovery studies results of which are close to 100% and values of standard deviation were satisfactorily low. The developed methods may perhaps be used for the routine analysis of losartan potassium from tablets formulation.

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