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Visible Spectrophotometric Methods for the Estimation of Loratadine from Tablets

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Two visible spectrophotometric methods have been developed for estimation of loratadine from tablet formulation. These visible spectrophotometric methods are based on formation of chloroform extractable coloured complex of drug with cobalt thiocynate and bromophenol blue. The coloured complex formed with cobalt thiocynate showed absorbance maxima at 624.5 nm and linearity in the concentration range of 1.2-3.6 mg/ml of loratadine while the coloured complex formed with bromophenol blue showed absorbance maxima at 413 nm and linearity in the concentration range of 0-120 μg/ml of loratadine. Results of analysis for both the methods were validated statistically.

Loratadine, chemically 4-(8-chloro-5,6-dihydro-11H-benzat-[5,6]cyclohepta [1, 2-b]pyridin-11-ylidene)-1-piperidinecarboxylic acid ethyl ester is an antihistaminic agent[1]. Few reported, analytical methods, for estimation of loratadine, include HPTLC[2-4], UV[5], colorimetric[6-7] and polorographic[8] methods. An attempt has been made in the present study to develop two simple visible spectrophotometric methods for analysis of loratadine from tablets.

A Jasco UV/vis recording spectrophotometer with 1 cm matched quartz cells was used for the preset study. All reagents used were of analytical grade. Cobalt thiocynate reagent was prepared as per IP. Bromophenol blue reagent 0.5 % was prepared in 0.2 M hydrochloric acid. Both the reagents were extracted several times with chloroform so as to remove chloroform soluble impurities.

***For correspondence**

For method I, standard drug solution in 0.2 M hydrochloric acid (6 mg/ml) was diluted with the same so as to give several dilutions in the concentration range of 1.2-3.6 mg/ml of loratadine. To 10 ml of each dilution taken in a separating funnel, 10 ml cobalt thiocynate reagent was added. Reaction mixture was shaken gently for 5 min. Then 10 ml of chloroform was added, shaken gently for 5 min and allowed to stand so as to separate the aqueous and chloroform layer. Coloured chloroform layer was separated out and the absorbance was measured at 624.5 nm against a reagent blank. Calibration curve was constructed from the absorbance values for several dilutions.

For analysis of sample solution, twenty tablets were accurately weighed and average weight of the tablet was

TABLE 1: RESULTS OF ANALYSIS AND RECOVERY STUDIES.

Method	Brand	Label Claim (mg/tab of loratadine)	% of Label Claim Estimated*	S.D.	% Recovery**
Using cobalt thiocynate	A	10	99.8	0.32	100.7
	B	10	99.0	0.19	
	C	10	98.1	0.23	
Using bromophenol blue	A	10	98.7	0.43	99.2
	B	10	98.8	0.27	
	C	10	98.2	0.46	

*Average of five determinations. **Average of recovery studies at three different concentration levels. Brand A-Loridine, 10 mg tablets of Cadila Health care, Brand B-Lorfast, 10 mg tablets of Cadila Pharmaceuticals and Brand C-Lormeg, 10 mg tablets of Alembic.

determined. The tablets were powdered and powder equivalent to 100 mg of loratadine was accurately weighed and transferred to a 50 ml volumetric flask. Hydrochloric acid (0.2 M, 35 ml) was added and shaken for 5 min to dissolve the drug. The solution was filtered through a Whatman filter paper no. 41 into another 50 ml volumetric flask. The filter paper was washed with 0.2 M hydrochloric acid. The washings were added to the filtrate and the final volume was made with 0.2 M hydrochloric acid. Ten milliliters of the filtrate was taken in a separating funnel and treated as per procedure described for calibration curve. Absorbance was measured at 624.5 nm and the concentration of drug in sample solution was determined from the calibration curve. Results of analysis are presented in Table 1.

For method II, standard drug solution in 0.2 M hydrochloric acid (6 mg/ml) was diluted with the same so as to give several dilutions in the concentration range of 0-120 μg/ml of loratadine. To 10 ml of each dilution taken in a separating, funnel, 10 ml bromophenol blue reagent was added. Reaction mixture was shaken gently for 5 min. Then 10 ml of chloroform was added, shaken gently for 5 min and allowed to stand so as to separate the aqueous and chloroform layer. Coloured chloroform layer was separated out and absorbance was measured at 413 nm against reagent blank. A calibration curve was prepared from the absorbance values so obtained.

For analysis of sample solutions, twenty tablets were accurately weighed and average weight of the tablet was determined. The tablets were powdered and powder equivalent to 20 mg of loratadine was accurately weighed and transferred to 100 ml volumetric flask. Hydrochloric acid (0.2 M, 75 ml) was added and shaken for 5 min to dissolve the drug. The solution was filtered through a Whatman filter paper no. 41 into another 100 ml volumetric flask. The filter paper was washed with 0.2 M hydrochloric acid. The washings were added to the filtrate and the final volume was made with 0.2 M hydrochloric acid. Ten millilitres of filtrate was taken in a separating funnel and treated as per procedure described for calibration curve. Absorbance was measured at 413 nm and the concentration of drug in sample solution was determined from calibration curve. Results of analysis are presented in Table 1. Recovery studies for both the methods were earned out by addition of known quantity of standard drug solution to pre analysed sample of tablet at three different concentration levels. Results of recovery studies are reported in Table 1.

In the present work, two methods have been developed for estimation of loratadine from tablet formulation. The developed methods are based on formation of chloroform extractable coloured complexes of the drug with cobalt thiocynate and bromophenol blue. Conditions required for the formation of coloured complex were optimised. The methods were found to be simple, accurate and economical. Percentage recovery was found to be in range of 98-100% and standard deviation below 0.40 for method I and respective values for method II were 98-99% and standard deviation below 0.50. Results of recovery studies indicated that the developed methods can be used for routine analysis of loratadine from tablet formulation.

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AntiHIV and Antibacterial Activities of 2-Substituted Thiadiazolo Quinazolines

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AntiHIV and antibacterial activities of 2-substituted-(1,3,4)-thiadiazolo (2,3-*b*) quinazolin-5(4*H*)-ones, were determined. Among the compounds tested for antiHIV activity, the compound VA5 gave maximum protection against HIV-2 (ROD). The compound VA2 (at 100 μg/ml) exhibited equivalent antibacterial activity with the standard ciprofloxacin (at 10 μg/ml) against *Klebsiella pneumoniae, Bacillus subtilis, Staphylococcus epidermitis, Shigella flexnari and Citrobacter ferundi.*

Recent literature is enriched with findings about the synthesis and pharmacological screening of quinazolines and condensed quinazolines[1]. The thiadiazolo quinazoline nucleus is associated with diverse pharmacological activities such as antibacterial[2,3], antifungal[4], phosphodiesterase inhibitory[5], antiinflammatory[6], platelet aggregation inhibitory[7] and antihypertensive[8,9]. Inspite of various condensed thiadiazolo quinazoline systems have been synthesized and studied for biological activities, the synthesis of (1,3,4)-thiadiazolo-(2,3-*b*)-quinazolines have received only scant attention[10]. Infact the first report on the synthesis of (1,3,4)-thiadiazolo-(2,3-*b*) quinazoline appeared in 1970 and very few reports have appeared since then. Earlier we have reported the synthesis, antiHIV and antibacterial activities of some thiadiazolo quinazolones and its bioisostere thriadiazolo thienopyrimidines[11,12]. In continuation of this work herein we report the antiHIV and antibacterial activities of a few 2-substituted (1,3,4)-thiadiazolo-(2,3-*b*)-quinazolin-5(4*H*)-ones. The title compounds (fig. 1) were prepared using methods that were earlier reported from our laboratory[11].

Melting points were determined in open capillary tubes on a Thomas Hoover apparatus and are uncorrected. IR spectra were recorded in KBr on a Perkin Elmer-841 grating spectrophotometer (cm^{-1}), mass spectra on a Varian Atlas CH-7 mass spectrometer at 70 eV. Elemental analysis was performed on a Carlo erba 1108.

The starting material 3-amino-2-mercapto quinazolin-4(3*H*)-one was prepared[11] by adding carbondisulphide (1.6 ml, 0.026 mol) and aqueous sodium hydroxide (1.2 ml, 20 mol solution) dropwise simultaneously, to a vigorously

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