y=0.0076x+0.0005. The molar absorptivity and Sandell's sensitivity are 2.379×0^3 l/mol.cm and 0.1323 μg/cm²/0.001, respectively, which indicate sensitivity of the method. The percent coefficient of variation (% CV) calculated from five replicate readings (absorbance values) at concentration 80 μg/ml of rofecoxib was found to be 0.2818, which is less than 2% confirming precision of the method. In a replicate analysis (n=5) of three brands of rofecoxib tablets each of 12.5 mg and 25 mg by proposed method, the percentages of rofecoxib were found to be in the range of 98.48–100.51 (Table 1). The percentage recoveries were found to be in the range of 98.69 to 101.83 (Table 1), indicating non-interference from the formulation excipients. The low values of standard deviation, %CV and 95% confidence limit reveal that the assay method is accurate and precise (Table 2). Ruggedness of method was checked and confirmed by an interday and an intraday analysis (Table 3).

A new, simple and statistically validated colorimetric method using NQSA reagent has been developed for the quantitative determination of rofecoxib in tablet formulation. The main advantage of the proposed method is its suitability for the routine quality control of the drug alone and in tablets without interference caused by the excipients expected to be present in the tablets.

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UV Spectrophotometric Determination of Carvedilol

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Two simple, fast, convenient, precise, reproducible UV spectrophotometric methods have been developed for the determination of carvedilol in pure form in tablets using methanol (method A) and polyethylene glycol-400:water (2:1) (method B). The UV spectrum of carvedilol showed absorption maxima at 242 nm and 245 nm, respectively in methanol and PEG-400:water (2:1). Good agreement with Beer's law was found in the range of 2 to 20 μg/ml for method A and 1 to 10 μg/ml for method B.

Carvedilol (CVD), (±)-1-(9H-carbazol-4-yloxy)-3-[(2-(2-methoxy phenoxy)] ethyl amino] -2-propanol[1], is a new antihypertensive drug, which has an additional α-adrenergic receptor antagonist activity and has been approved for the treatment of essential hypertension and symptomatic heart failure[2]. Literature survey revealed the availability of a HPLC method with spectrofluorometric detection[3] and Tandem mass spectrometric method[4] for its estimation. No reported UV Spectrophotometric methods are available for routine quality control analysis. The present paper describes two simple, reproducible and sensitive UV spectrophotometric methods for the determination of CVD.

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TABLE 1: OPTICAL CHARACTERISTICS AND PRECISION OF THE PROPOSED METHODS

Parameter	Method 'A'	Method 'B'
λ_{max} (nm)	242.0	245.0
Beer-Lambert's law limit (µg/ml)	2-20	1-10
Molar absorptivity (mol^{-1} cm^{-1})	$2.1928x10^4$	$4.4525x10^4$
Regression equation (Y=a+bc)		
Slope (b)	$5.19x10^{-2}$	$1.044x10^{-1}$
Intercept (a)	0.014	0.017
Correlation Coefficient (r)	0.9998	0.9997
Relative standard deviation (n=7)	(±) 0.0099	(±) 0.0132
Standard error	$4.751x10^{-7}$	$5.696x10^{-7}$
% error in bulk samples (n=3)	$2.5x10^{-6}$	$3.7x10^{-6}$
Sandell's sensivitity (ng cm^{-2} per 0.001 absorbance unit)	18.34	9.08

All the chemicals used were of analytical grade. Methanol and dichloromethane was purchased from Spectrochem, Mumbai; and polyethylene glycol-400 was procured from Himedia, Mumbai. The commercially available tablets were procured from a local pharmacy store. Spectral and absorbance measurements were made on GBC Cintra 10 UV/Vis Spectrophotometer with 10 mm quartz cells.

Standard stock solutions of 100 µg/ml each were prepared in methanol for method A and inn PEG 400:water (2:1) for method B. Aliquots of these stock solutions were suitably diluted in respective solvents to get working standard solution of drug in concentration range of 2-20 µg/ml (method A) and 2-10 µg/ml (method B). All the solutions were prepared in amber coloured volumetric flasks. The absorbances of each solution were measured at respective absorbance maxima, 242 nm for method A and 245 nm for method B. the calibration curve for both methods were plotted and evaluated (Table 1).

Cardivas tablets (3.125, 6.25 and 12.5 mg) of Sun Pharma, Vadodara were taken for analysis of CVD using the present method. Twenty tablets of CVD were weighed, crushed in a glass mortar and powder equivalent to ten tablets was dispersed in 10 ml of double distilled water. The drug was extracted with three 10 ml portions of dichloromethane (DCM) using a separating funnel. The mixture was shaken well and the lower DCM layer containing CVD was separated out. The DCM layer was dried in a volumetric flask at lower temperature in vacuum and sufficient amount of methanol/PEG400-water mixture was added. This was diluted suitably within analytical concentration range for the determination of CVD.

The optical characteristics of the methods A and B are presented in Table 1. There is a bathochromic shift and hyperchromic effect in method B. This might had happened due to the PEG used in the method B, which remain as coiled form in water and drug was solvated by the cosolvent effects, where the molecules of drug can get solubilized in water due to the accommodation facilitated by coiled PEG in water network. The interaction of PEG with water and carvedilol partially or so-called entrapment actually causes the changes in absorbance and intensity of the absorption of the drug molecules. By the straight calibration curves, it can be inferred that the methods A and B are following Beer-Lambert's law in the range of 2-20 µg/ml and 1-10 µg/ml, respectively. The precision and accuracy of methods were tested by measuring seven replicate samples of dilutions in the given concentration ranges. These methods of estimations were found quite sensitive for the measurements of the drug concentrations in spectrophotometric ranges. Commercial formulations containing CVD were

TABLE 2: ASSAY OF CVD IN TABLETS

Marketed *Cardivas* tablets	Labelled amount (mg/tablet)	Amount found by proposed method*	Average % recovery by proposed method
Tablet-1	12.5	12.48±.001	99.80
Tablet-2	6.25	6.223±.003	99.56
Tablet-3	3.125	3.118±.012	99.77

*Readings are in the form of mean±sd, where n=3. Tablet-1 is Cardivas of 12.5 mg strength, Tablet-2 is Cardivas of 6.25 mg strength and Tablet-3 is Cardivas of 3.125 mg strength

successfully analyzed by the proposed methods (Table 2). None of the usual excipients employed in the formulation of dosage forms interfered in the analysis of CVD by the proposed methods. In conclusion, the proposed new methods are economic, simple, sensitive, precise and reproducible for the routine determination of CVD in bulk as well as in its pharmaceutical preparations like tablets.

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Simultaneous Reverse Phase Liquid Chromatographic Determination of Metoprolol Tartrate and Hydrochlorthiazide in Tablets

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A simple Reverse phase liquid chromatographic method has been developed and subsequently validated for simultaneous determination of metoprolol tartrate and hydrochlorthiazide in combination. The separation was carried out using a mobile phase consisting of acetate buffer of pH 5.0 and acetonitrile in the ratio 80:20. The column used was Lichrosphere C-18 with flow rate of 1.0 ml/min and UV detection at 254 nm. The described method was linear over a concentration range of 300-700 µg/ml and 40-80 µg/ml for the assay of metoprolol tartrate and hydrochlorothiazide, re-

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