

tract. Resorption of implants was observed with 400 mg dose of both the extracts on laparotomy, as evidenced by scar marks of implantation sites in the uterine horns of animals. In animals treated with 200 mg dose for both the extracts, on laparotomy the uterine horns showed reduced number of implantation sites compared to the control group animals.

Reproductive cycle in mammals commences with the onset of puberty and in laboratory animals like rats. It is usually judged with the help of vaginal opening at about 38 d of age⁹. Reproductive and general metabolic effects in mature and immature rats are manipulated with the ingestion of phytoestrogenic substances and produce effects similar to that of gonadal steroid 17 β -estradiol¹⁰. A number of plant extracts have been shown to exhibit estrogenic activity in rats¹¹. In the present investigation, the root extracts have also shown a prominent estrogenic activity as evidenced from Table 1. Both the extracts increased uterine weight and caused opening and cornification of vagina in immature rats. Preliminary phytochemical observations of the petroleum ether extract reveals the presence of steroids and that of chloroform extract reveals the presence of steroids and alkaloids which could be possibly responsible for the activity. The roots of *Cyclea burmanni* are reported to have contraceptive value in the folklore remedies. The present work justifies its effectiveness in preventing pregnancy in all rats when administered at 400 mg/kg p.o.

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Spectrophotometric Method for the Estimation of Cefpodoxime Proxetil

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A simple and reproducible spectrophotometric method has been developed for the estimation of cefpodoxime proxetil. This method is based on the reaction of the drug with ferric chloride and potassium ferricyanide, which forms a green chromogen exhibiting maximum absorption at 780 nm.

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A few analytical methods¹⁻⁷ based on HPLC and spectrophotometries have been reported earlier for the determination of cefpodoxime proxetil, an extended spectrum oral cephalosporin. We now report the development of a simple and reproducible spectrophotometric method for its estimation in pure and formulation forms. Spectrophotometric parameters were established for standardization of the method by statistical analysis of the data. This method has been successfully extended to the pharmaceutical preparations containing cefpodoxime proxetil.

All the chemicals used were of analytical grade. Solutions of ferric chloride (0.1 M) and potassium ferricyanide (0.1 %) were prepared using double distilled water. Cepodem tablets (Stancare) were used as sample formulations of the drug for testing the method. Spectral and absorbance measurements were made on a Systronics UV/Vis spectrophotometer model 117 with 10 mm-matched quartz cells.

About 100 mg of pure cefpodoxime proxetil was accurately weighed and dissolved in 100 ml of methanol. This stock solution was further diluted with distilled water to get a working standard solution containing 50 µg/ml of the drug. Similarly, the stock solution of the sample was prepared by dissolving in 100 ml of methanol a quantity of the finely ground tablet powder equivalent to 100 mg of the drug.

In the method, aliquots ranging from 0.05-0.4 ml of the working standard solution of cefpodoxime proxetil along with 0.5 ml of ferric chloride solution and 1.5 ml of potassium ferricyanide solution were added to a series of 10 ml graduated test tubes and the tubes were kept aside at room temperature for 20 min. Appropriate quantity of distilled water was added to each tube to make up the volume. The absorbance of green colored complex formed was measured at 780 nm against a reagent blank. The same procedure was adopted for the sample solution also. The amount of the drug present in the sample solution was computed from the calibration curve prepared for the standard solution.

TABLE 1: OPTICAL CHARACTERISTICS AND PRECISION DATA.

Beer's law limit (µg /ml)	0.25-2.0
Sandell's sensitivity (µg /cm ² / 0.001 absorbance unit)	0.00240
Molar extinction coefficient (l / mole. cm)	2.3122x10 ⁵
%Relative standard deviation	0.7551
%Range of error	
0.05 confidence limits	±0.6313
0.01 confidence limits	±0.9341
Correlation coefficient	0.9999
Regression equation (Y*)	
Slope (a)	0.4110
Intercept (b)	0.0028

Y*=b+aC, where C is concentration in µg/ml and Y is absorbance unit.

The drug reduces ferric chloride to ferrous form, which in turn couples with potassium ferricyanide to give a green coloured potassium ferro ferrous complex. The optical characteristics such as Beer's law limits, Sandell's sensitivity, molar extinction coefficient, percent relative standard deviation and percent range of error were calculated for the method and the results are summarized in Table 1. The values obtained for the determination of cefpodoxime proxetil in tablets by the proposed method are compared with those of a reported method⁵ (Table 2). To evaluate the recovery of the method, known amounts of pure drug were added to the previously analyzed pharmaceutical preparations and the mixtures were analyzed by the proposed method. The percent recoveries thus obtained are given in Table 2. Interference studies revealed that the common excipients and other additives usually present in tablet dosage forms did not con-

TABLE 2: ASSAY OF CEFPODOXIME PROXETIL IN TABLETS.

Sample	Labelled amount (mg)	Amount obtained (mg)		Percent recovery by the proposed method
		Reported method ⁵	Proposed method	
1	200	199.4	199.6	99.80
2	200	200.2	199.7	99.85
3	100	99.4	99.5	99.50

tribute in the proposed method.

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Protective Effect by Aqueous Extract of *Phyllanthus amarus* Linn., Phyllanthin and Nirocil against Carbontetrachloride-induced Liver and Brain Toxicity

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Effect of carbontetrachloride treatment on hepatic and brain antioxidant status in rats pretreated with aqueous extract of *Phyllanthus amarus* Linn. (Euphorbiaceae), nirocil (a tablet made up of aqueous extract of *P. amarus*), phyllanthin (a bioactive lignan from *P. amarus*), and silymarin were studied. Plasma aspartate aminotransferase and alanine aminotransferase were estimated to monitor the extent of hepatocellular damage. Tissue lipid peroxide, ascorbic acid and total protein levels were used as the markers for functional and antioxidant efficiency of liver and brain cells. Phyllanthin reversed the elevated plasma aminotransferase levels but did not affect hepatic antioxidant status. In all the paradigms tested for hepatoprotection, nirocil, silymarin and aqueous extract (90 mg/kg) showed significant protection. There was a drastic impairment in the functional and antioxidant status of brain on treatment with carbontetrachloride. None of the drugs except silymarin showed good protection against carbontetrachloride-induced lipid peroxidation in the brain, but all these produced a significant increase in the protein levels. All the drugs administered, augmented the ascorbate levels in liver and brain, with the aqueous extract of *P. amarus* clearly outdoing the others.

Phyllanthus amarus has been traditionally used as a folk remedy for the treatment of jaundice in India and various other parts of the world. Its protective activity has been

demonstrated in chemically-induced liver toxicity model^{1,2}. In this study, the antioxidant-cytoprotective property of *P. amarus* and its formulations was evaluated and compared with silymarin, a standard antioxidant-cytoprotective agent. Further, a recent report indicates that in acute liver failure, increased accumulation of glutamine, glutamate and inflam-

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