tablets and syrups. The content of the phenothiazine drug was calculated using the formula:

$$\text{mg. phenothiazine} = \frac{A_t.D.C.}{A_s.100}$$

where A_t and A_s are the absorbances of the test and the standard solutions respectively, C is the concentration of phenothiazine in $\mu g\ ml^{-1}$ and D is the dilution factor.

The proposed method is simple and offers the advantage of sensitivity and a wide range of determination without the need for heating or extraction. Moreover the proposed method does not involve any critical reaction conditions or overall tedious sample preparation. Hence the proposed method may be utilized for routine quality control of phenothiazine drugs.

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Salubrious Effect of *Tridax procumbens* on Paracetamol Hepatotoxicity

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***Tridax procumbens* is a hepatoprotective agent. Overdosage of paracetamol induces hepatotoxicity. This paper reports the salubrious effect of *Tridax procumbens* on the paracetamol-induced hepatotoxicity in Wister rats.**

Paracetamol (Acetaminophen) is an analgesic and antipyretic which is considered safe when taken appropriately. It is marketed under various brand names[1]. Since it is available without prescription, it has earned a prominent place as a common household analgesic. Overdose of paracetamol causes hepatic necrosis in laboratory animals[2] and in men[3]. Paracetamol is metabolised primarily by the hepatic microsomal enzymes[4]. After therapeutic doses, 90-100% of the drug may be recovered in the urine, primarily after hepatic conjugation with glucuronic acid and sulfuric acid[5]. A portion of paracetamol undergoes cytochrome P_{450}-mediated N-hydroxylation to form a highly reactive intermediary metabolite. This metabolite conjugates with glutathione to form a non-toxic mercapturic acid. In overdoses, the availability of glutathione was decreased to conjugate with the metabolite and so the unconjugated metabolite induces the liver cell necrosis[6].

Tridax procumbens belongs to the family Asteraceae of dicotyledons. It is a common weed found in varied ecological habitats. *Tridax* has been used by the village folk to cure cuts and wounds. Udupa *et al.*[7] studied the effect of *Tridax* on the developing granulation tissue in

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rats. Lysyl oxidase activity, protein content, collagen content and breaking strength of bones also have been reported by them to increase gradually in the treated animals[8]. Ethanolic extract of *Tridax* administered to albino rats as 10% ointment, as well as orally for 21 days were found to promote hair growth effectively[9]. Ethanolic extract and chloroform insoluble fraction of Tridax were effective against hepatitis induced in rats[10]. *Tridax procumbens* has antihepatotoxic action justifying its use in liver affections[11,12]. In the current study, this hepatoprotective action of the *Tridax procumbens* was studied against the hepatotoxicity induced by the high doses of paracetamol in Wister rats.

Male rats weighing 125-150 g were used for the investigations. They were housed in separate cages in a well ventilated room and fed with standard rodent pellet diet and water. Wister albino male rats were given 1 ml of normal saline/rat/day for 7 days for stabilisation. After 7 days, the animals were grouped into 4, each group containing 5 animals. Powdered, shade dried *Tridax* leaves (5%) were given to the rats in combination with the powdered feed (95%) orally. Paracetamol suspension was prepared by mixing the powdered paracetamol tablet with normal saline to give a 750 mg/kg dose, which when administered orally induced hepatic injury.

Group I animals were given normal saline and normal feed to serve as control. Group II animals were administerd a single dose of paracetamol suspension (750 mg/kg) at the end of the day 7. Group III animals received feed mixed with 5% powdered *Tridax* leaves. Group IV animals also received 5% powdered *Tridax* leaves, mixed with the feed, but were also given a paracetamol suspension (750 mg/kg) at the end of the day 7. On day 9, which is 36 h after paracetamol treatment, all the animals were sacrificed and the blood samples were collected for investigations. The animals were sacrificed by cervical dislocation after ether anesthesia. During autopsy, liver was excized and weight of the individual liver was recorded. WBC and RBC were counted in the whole blood. Blood urea and cholesterol were estimated using serum. Data are expressed as mean±SD and subjected to student's "t" test for statistical significance at the level of significance of $P \leq 0.05$ (Table 1).

From Table 1, it is clear that *Tridax* influences the activity of paracetamol at the organ, hematological and biochemical levels. The normal liver weight which is 3.7 g was decreased to 2.8 g due to paracetamol toxicity. But when *Tridax* is supplemented along with paracetamol, the liver weight raises up to 3.3 g. In the case of RBC and WBC the significant increase due to paracetamol treatment, from the normal value has been reduced back to almost normal condition due to the supplementation of *Tridax* along with paracetamol (Table 1). Due to paracetamol toxicity, a drastic decrease in the blood urea level from 25.7 mg/dl to 8.8 mg/dl is observed. *Tridax* is

TABLE 1: EFFECT OF *TRIDAX PROCUMBENS* ON PARACETAMOL-INDUCED HEPATOTOXICITY

PARAMETERS	GROUP-I Control	GROUP-II Paracetamol	GROUP-III *Tridax*	GROUP-IV Paracetamol + *Tridax*
Liver weight (g)	3.7 ± 0.16	2.8 ± 0.16 *	3.5 ± 0.16	3.3 ± 0.19*
WBC count (cells/cumm)	6050 ± 146	6840 ± 143*	6720 ± 104 *	6090 ± 216
RBC count (cells/cumm)	18,70,000 ± 20,000	21,50,000 ± 15,811*	24,50,000 ± 22,361*	19,10,000 ± 27,386*
Urea (mg/dl)	25.7 ± 0.86	8.4 ± 0.4*	25.8 ± 0.4	19.9 ± 0.63*
Cholesterol (mg/dl)	100 ± 3.87	133 ± 3.39*	093 ± 3.39*	124 ± 2.45*

* denotes statistical significance in comparison to the control at $p<0.05$. Liver weight was determined by gravimetric method. WBC and RBC counts were by haemocytometric method. Urea was determined by DAM method of Span diagnostics and cholesterol was determined using the method of Wybenga and Pilleggi

able to increase the urea level (19.9 mg/dl) significantly. Similarly the normal cholesterol level, 100 mg/dl which significantly increases up to 133 mg/dl due to paracetamol, has been decreased to 124 mg/dl. Thus *Tridax* seems to reduce the hepatotoxicity produced by the paracetamol. This needs further confirmation with the enzyme and histopathological studies.

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Simultaneous Spectrophotometric Estimation of Losartan Potassium and Hydrochlorothiazide from Combined Dosage Form

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Two simple, accurate and economical procedures for simultaneous estimation of losartan potassium and hydrochlorothiazide in two component tablet formulations have been developed. The methods employ program in the multicomponent mode of analysis of the instrument used and simultaneous equations using area under curve. In all glass double distilled water losartan potassium has an absorbance maxima at 205 nm, hydrochlorothiazide has three absorbance maxima at 225, 272 and 315 nm. Both the drugs obey the Beer's Law in the concentration ranges employed for these methods. The results of analysis have been validated statistically and by recovery studies.

The literature describes HPLC[1-3], electrophoresis and supercritical fluid chromatography[4] methods for the analysis of losartan potassium where as HPLC[5-7], HPTLC[8], spectrophotometric[9,10] and non-aqueous potentiometric titration[11] methods for the analysis of hydrochlorothiazide. Only RP-HPLC[12] method has been established for their simultaneous determination, but no spectrophotometric method is available for estimation of these drugs in combined dosage form. The objective of this investigation was to devise two simple, accurate and economical spec-

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