

Table - I : Results of Assay and Recovery Experiments

Reagent Used	Labelled amount (Mg/tab)	% of label claim estimated*	C.V.	% Recovery**
BCG	4	98.34 (0.262)	1.336	98.68
	8	99.08 (0.131)	0.664	
BPB	4	99.71 (0.183)	0.918	99.27
	8	99.04 (0.062)	0.317	
TB	4	99.53 (0.192)	0.966	98.75
	8	98.92 (0.109)	0.555	

\* Average ( $\pm$  standard deviation ) of three determinations.

\*\* Recovery of amount added to the pharmaceutical formulation (average of four determinations)

on formation of chloroform extractable ion pair complexes of benidipine hydrochloride with dyes. Methods are economical and rapid. Since none of the methods is reported for estimation of drug from pharmaceutical formulation, these methods can be of great value for routine analysis.

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## Antiinflammatory Activity of the Essential Oil of *Cymbopogon Martinii*

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Oil of *Cymbopogon martinii* leaves obtained by distillation was given orally to study its effects on the exudative phase of the inflammatory reactions, using the technique of carrageenan-induced paw oedema. Oil of *Cymbopogon martinii* showed dose-dependent anti-inflammatory activity comparable to that of diclofenac sodium.

**C**YMBOPOGON *martinii* (fam:Graminae) is commonly known as palmarosa. The leaves of *Cymbopogon martinii* contains about 1.4% oil (dry basis), the oil content is more or less constant throughout

the season<sup>2</sup>. The oil is usually soluble in 3 Volumes of 70 % alcohol, it consists of d- $\infty$ -phellandrene, d-limonene, perillic alcohol an aldehyde of the formula C<sub>10</sub>H<sub>16</sub>O and traces of carvone<sup>3</sup>. *C. martinii* have been reported to have diuretic, diaphoretic and emmenagogue<sup>4</sup> properties.

\* For Communication

**Table 1: Effect of Essential oil of *C. martinii* on carrageenan-induced paw edema.**

	Drug ml/kg	Increase in paw volume after 3 h	% decrease in paw volume
1.	Control (5% gum acacia)	0.52 ± 0.03	—
2.	Diclofenac sodium (5 mg/kg)	0.16 ± 0.02	69.24* ± 3.8
3.	Oil (0.2 ml/kg)	0.30 ± 0.03	42.31* ± 2.7
4.	Oil (0.4 ml/kg)	0.24 ± 0.04	53.85* ± 4.2
5.	Oil (0.8 ml/kg)	0.18 ± 0.03	65.39* ± 4.5

Each value represents mean ± standard error of the mean of a sample size of 10. Astericks indicate significant difference from control at  $p \leq 0.001$ .

In medicine, it is used as a remedy for lumbago and stiff joints and in skin diseases<sup>5</sup>. The present work is focused on the evaluation of anti-inflammatory activity of the essential oil of *C. martinii*.

Essential oil was extracted from fresh leaves of *C. martinii* by steam distillation. This oil was used after emulsifying in gum acacia (5%) for oral administration. Male albino rats weighing between 150 to 200 g bred in King Institute, Guindy, Chennai were selected for the studies. Antiinflammatory activity was studied using the carrageenan-induced rat hind paw oedema method.

Animals were divided into 4 groups consisting of 5 animals in each group. One group served as control. For remaining 3 groups oil was administered orally in different doses of 0.2, 0.4 and 0.8 ml/kg.

Following drug administration, during the first 2 h animals were observed for gross behavioural changes (behavioural, neurological and autonomic response). Animals observed once in half an hour for the next 4 h and then once in 24 h to determine percent mortality.

The rats were divided into five groups, each group consisting of 10 animals. One group served as negative control (received 5% Gum acacia solution 5 ml/kg), the second group served as positive control (received diclofenac sodium 5 mg/kg) while the other groups received

essential oil in different doses of 0.2, 0.4 and 0.8 ml/kg orally.

Oedema was produced by the method described by Winter *et al*<sup>6</sup>. The paw volume was measured at 0 h at 3 h, after the injection of carrageenan. The apparatus used for the measurement of rat paw volume was that of Buttle *et al* as modified by Singh and Ghosh<sup>7</sup>. This method, followed here in our laboratory is capable of detecting a minimal change of paw volume of 0.02 ml. Drug pretreatment was given 1 h before the injection of carrageenan. The percent inhibition of oedema was calculated.

The essential oil of *C. martinii* leaves was found to be safe upto a maximum dose 0.8 ml/kg. There was no mortality and no changes in behavioural, neurological and autonomic responses were observed. Table 1 shows the effect of drug treatment on carrageenan-induced oedema. The results were analysed by analysis of variance<sup>8</sup>.

The oil of *C. martinii* leaves seems to be very safe as it did not show any toxicity in acute toxicity studies. The ten day administration of the oil also did not show any toxic manifestations.

The oil of *C. martinii* leaves produced dose-dependent inhibition of carrageenan-induced paw oedema. Carrageenan-induced paw oedema was taken as a prototype of exudative phase of inflammation. The development

of oedema has been described to be biphasic<sup>9</sup>. The initial phase is attributable to the release of histamine, serotonin, and kinin in the first hour after injection of carrageenan. A more pronounced second phase is related to the release of prostaglandin-like substances during the next 2-3 hours. The significant anti-inflammatory effect of oil of *C. martinii* leaves, may perhaps be due to inhibition of the prostaglandin pathway.

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## Three simple spectrophotometric methods for the estimation of tinidazole and furazolidone in tablets

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Three accurate and simple methods for the simultaneous estimation of tinidazole and furazolidone in tablet formulations have been developed. The methods employ first derivative spectrophotometry, simultaneous equations and the multicomponent mode of UV-160A Shimadzu spectrophotometer. Both the drugs obey Beer's law in the concentrations employed for these methods. The results of the analysis have been validated statistically and by recovery studies.

**T**INIDAZOLE, is an antiprotozoal drug belonging to the class of nitroimidazole derivative. The methods reported for the analysis are based on titrimetry<sup>1</sup>, spectrophotometry<sup>2</sup>, colorimetry<sup>3</sup>, GLC<sup>4</sup>, and HPLC<sup>5,6</sup>. Furazolidone, a nitofuran derivative, is an antibacterial drug. The methods reported are based on spectrophotometry<sup>7-9</sup>, differential spectrophotometry<sup>10</sup>, HPLC<sup>11,12</sup> and HPTLC<sup>13</sup>. Since only HPLC and HPTLC methods<sup>14</sup> have been reported for the simultaneous determination of the two drugs, in combined dosage form, this paper presents three simple, accurate, reproducible and economical methods for the simultaneous analysis of the two components in tablet formulations.

Shimadzu UV160A recording spectrophotometer was used for our experiments. Accurately weighed 100 mg of tinidazole and furazolidone were dissolved separately in N,N-dimethyl formamide and made upto 100 ml. From this stock solution, dilutions in 0.1 M hydrochloric acid were made to get concentrations of 6 - 30 µg/ml of tinidazole and 2 - 10 µg/ml of furazolidone respectively. Both the drugs obey the Beer's law in these concentration ranges employed as above, at 276.6 nm and 367 nm respectively.

Twenty tablets were weighed and ground to a fine powder. An accurately weighed quantity of powder equivalent to 300 mg tinidazole and 100 mg furazolidone was weighed