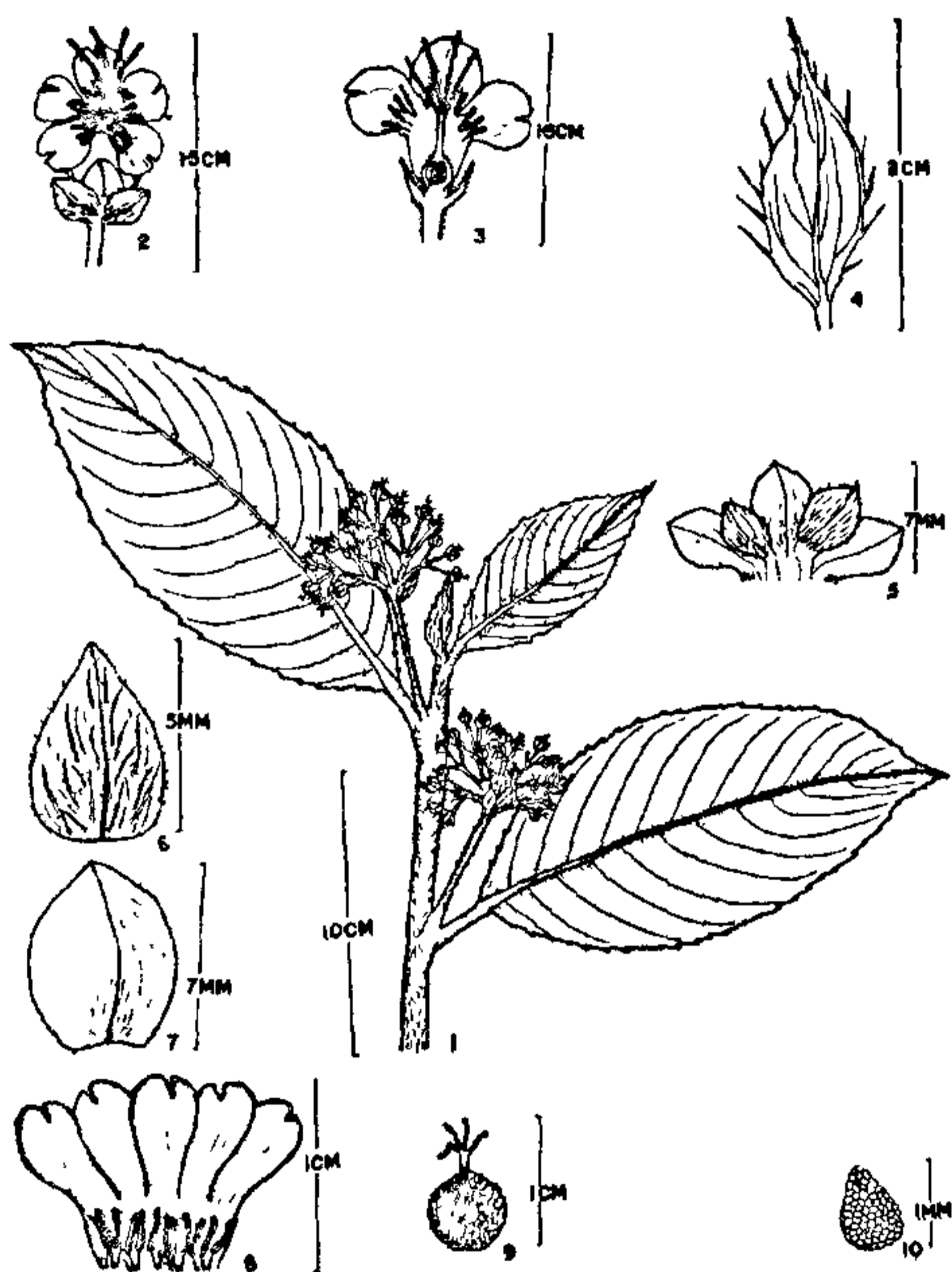


scaly or not. Corolla ± 1 cm long, imbricate, white; petals 5, each $\pm 6 \times 3$ mm, obovate, notched at apex, connate below. Stamens many, filaments united at base; anthers versatile. Ovary densely tomentose, 5-loculed; ovules many, axile; styles 4-5, united at base. Berries $\pm 10 \times 6$ mm, globose, densely white tomentose, styles persistent; seeds $\pm 1 \times 0.5$ mm, pyramidal, reticulate, pitted (figures 1-10).

Excsc.: Yoganarasimhan & party 600 collected from East-West Road, Campbell Bay, Great Nicobars, on 26th March, 1980, deposited at RRCBI (Regional Research Centre, Bangalore), 600 A at K, 600B at PBL and 600C at CAL.

The leaves of species of *Saurauia* are reported to be used as fodder, in the preparation of hair-pomade; bark in medicine and wood as a building material and packing cases⁴.



Figures 1-10. *Saurauia bracteosa* DC.: 1. Twig with inflorescence; 2. flower; 3. 1. s. flower; 4. bract; 5. calyx spread out; 6. outer sepal; 7. inner sepal; 8. corolla split open; 9. fruit with persistent style; 10. seed.

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1. H. Santapau and A. N. Henry, *A Dictionary of the Flowering Plants in India*, CSIR, New Delhi, p. 153. 1973.
2. W. T. Thiselton Dyer, 1874, *In Hooker f. Fl. Brit. India*, London, L. Reeve & Co, 1, 286.
3. Backer, C. A. and R. C. Bakhuizen van den Brink, 1963, *Flora Java Groningen*, 1, 326.
4. Anonymous, 1972, *The Wealth of India*, 9, 238, CSIR, New Delhi.

IN VITRO ACTION OF AMOEBICIDAL AGENTS ON TROPHOZOITES OF *ENTAMOEBIA HISTOLYTICA* UNDER AXENIC CONDITION

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A RELIABLE and reproducible method for the evaluation of direct action of amoebicidal agents against trophozoites of *Entamoeba histolytica* was reported¹. Some of these compounds have been consistently shown to be less effective in media bearing an acidic pH². It is well-known³⁻⁵ that the optimal growth of trophozoites of *E. histolytica* occurs at about pH 6.5. This communication deals with the *in vitro* action of drugs on trophozoites of *E. histolytica* in relation to the number of amoebae in the inocula.

Axenic cultures of *E. histolytica* (NIH-200) maintained in modified TP-S-1 medium⁶ were used in these studies. The media for test purposes were prepared with 0.3% L-cysteine hydrochloride without ascorbic acid. These modifications provided stable conditions for the growth of *E. histolytica* over longer periods and thus were useful for determining the action of drugs after prolonged periods of incubation. The pH of the test medium was adjusted to 7.2 with the aid of N/10 sodium hydroxide.

The procedures used for determining the action of emetine hydrochloride (BDH, UK) and metronidazole (M & B, UK) on trophozoites of *E. histolytica* were similar to those described earlier except that the number of amoebae in the test inoculum was 1×10^3 , 10×10^3 , 100×10^3 and 1000×10^3 .

It is apparent from the results (table 1) that both these drugs fail to eradicate the trophozoites of *E. histolytica* even at a concentration of 125 $\mu\text{g}/\text{ml}$ when tests are conducted using large population of amoebae. However, these drugs even in very low concentrations exerted amoebostatic action. The increased efficacy of these drugs against *E. histolytica* when the inocula consisted only of about 10^3 amoebae

TABLE I

The *in vitro* action of amoebicidal agents against trophozoites of *E. histolytica* in relation to the size of amoebic inocula ($\times 10^3$) in modified TPS-1 medium at 72 hours.

Drug dilution $\mu\text{g/ml.}$	No. of trophozoites*							
	Emetine hydrochloride				Metronidazole			
	1	10	100	1,000	0.82	8.2	82	822
125	—	—	—	+	—	—	—	46
62.5	—	—	—	330	—	—	—	72
31.2	—	—	—	123	—	—	+	162
15.6	—	—	—	62	—	—	12	110
7.8	—	—	+	60	—	—	10	118
3.9	—	+	30	576	—	—	5	100
1.8	—	+	120	553	—	+	36	188
0.9	—	+	75	795	—	+	26	282
0.45	+	21	120	879	—	+	36	108
0.22	12	18		990	+	+	38	206
Control	+	37	1250	1980	15	42	1360	2410

(*) Average figures from duplicate sets of tubes, (+) = only a few motile trophozoites could be seen
(-) = none present.

can also be attributed to the compounding effect of the drug with the lag phase of cultures which are most pronounced when only few amoebae are used for seeding purposes.

Payne reported that about 33% of cases of human intestinal amoebiasis after adequate treatment with emetine hydrochloride resulted in cures⁷. The rest of the cases either relapsed or failed to respond altogether to this form of treatment. The development of new amoebicidal agents too have failed to provide satisfactory results. One of the reasons⁸ for the occurrence of relapse in human cases of intestinal amoebiasis is the possible *in vivo* failure of the drugs in eradicating the trophozoites of *E. histolytica* from their luminal habitat. The results of this investigation show that while the drugs possess amoebostatic action, yet, they are ineffective as amoebicidal agents. The *in vivo* efficacy of these drugs in the eradication of trophozoites of *E. histolytica* from the luminal habitat of experimentally infected rat caeca in relation to pH of the Caecal contents and degree of infection are under investigation.

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I. Das, S. R. and Krishna Prasad, B. N. *Curr. Sci.* 1973, 42, 227.

- Dutta, G. P. and Yadav, J. N. S. *Indian J. Med. Res.*, 1976, 64, 224.
- Shaffer, J. G. *Ann. N. Y. Acad. Sci.*, 1956, 56, 1032.
- Rees, C. W., Key, I. D. and Shaffer, J. G. *Am. J. Trop. Med. Hyg.*, 1960, 9, 162.
- Eaton, R. D. P. *Trans. R. Soc. Trop. Med. Hygiene*, 1977, 71, 554.
- Singh, B. N., Das, S. R. and Dutta, G. P. *Curr. Sci.*, 1973, 42, 227.
- Anderson, H. H., Bostick, W. L. and Johnstone, G. H. *Amoebiasis: Pathology, Diagnosis and Chemotherapy*, Charles C. Thomas, Springfield, Illinois.
- Singh, B. N. *Pathogenic and Non-Pathogenic Amoebae*, The MacMillan Press, London and Basingstoke.

A COLLATERAL HOST FOR CITRUS PHYTOPHTHORA

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PHYTOPHTHORA nicotianae B. de Haan var. *parasitica* (Dast.) Waterh., inciting root rot, gummosis, leaf fall and fruit rot on citrus is widespread from July to September in high rainfall