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Letter to the Editor

Diuretic activity of *Coccinia grandis* in rats

Sir,

Coccinia grandis Linn (Family: Cucurbitaceae) is a climbing herb, growing wild throughout India. The fruit is aphrodisiac, allays thirst, useful in biliousness, diseases of the blood and as diuretic purpose (Kirtikar and Basu, 2000; Chopra et al., 2006). It is also used to cure bronchitis, leprosy, anemia, and inflammation. The juice of the thick tap-root is used to cure the diabetes. The bark of the root, dried to reduce to powder, is said to act as good cathartic. The leaves are applied externally in eruption of the skin, and externally in gonorrhoea. Powder of stem and dried leaf decoction has significant hypoglycemic and hypolipidemic effects in diabetic patients. The present study is focused to find out its diuretic activity in rats.

Shade dried fruits of *C. grandis* were powdered to get a coarse powder. About 500 g of dry powder were extracted with alcohol in Soxhlet apparatus to get a brown color residue after removing alcohol. The aqueous extract was obtained by macerating 500 g of *C. grandis* with 10 litres of boiling water. The filtrate was reduced to 500 mL in vacuo at about 35°C and freeze dried afterwards. Male albino rats with body weights between 140-160 g were taken for the study. The method was employed for the assessment of diuretic activity (Lipschitz et al, 1943). Groups of 6 male albino rats were fasted and deprived of water for 18 hours prior to the experiment. On the day of experiment, animals were given normal saline orally 25 mL/kg of body weight in which the alcoholic and aqueous extracts were dissolved. Control animals received saline only. Immediately after the dosing (100 mg/kg), the rats (three in each cage) were placed in metabolic cages specially designed to separate urine and feces and kept at room temperature of 25 ± 5°C. The urine was

collected in measuring cylinders up to 5 hours after dosing. During this period no food or water was made available to animals. The total volume of urine collected was measured for both control and treated groups. The parameters taken for each individual rat were, body weight (before and after test period), urine concentration of Na⁺, K⁺, and Cl⁻ were applicable, measured before and after the actual experiment.

Na⁺ and K⁺ concentrations were measured by flame photometry and Cl⁻ concentration is estimated as sodium chloride by titration with silver nitrate solution.

The values of urine volume were elevated (Table I). The cation excretion is increased. The significant alteration of cation excretion is observed in aqueous and alcoholic extracts treated animals, which is nearly equivalent to furosemide.

The results clearly show that aqueous and alcoholic extracts of *C. grandis* enhance considerably the urine excretion equivalent to furosemide control values. These findings may provide a lead for further investigation of overall pharmacological action of *C. grandis* in a more appropriate model.

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References

- Kirtikar KR, Basu BD. Indian medicinal plants. Published by Lalit Mohan Basu, 2nd ed. Vol 5. 2000
- Chopra RN, Nayar SL, Chopra IC. Glossary of Indian medicinal plants, C.S.I.R., 1st ed. 2006.
- Lipschitz WL, Hadidianz, Kerpskas A. Bioassay of diuretics. J Pharmacol Exp Ther. 1943; 79: 97-110.

Table I

Effect of *Coccinia grandis* on excretory parameters

Treatment	Dose (mg/kg)	Urine volume (mL)	Electrolyte excretion			Total chloride (μmol/kg)
			Na ⁺ (mmol/kg)	K ⁺ (mmol/kg)	Na ⁺ /K ⁺	
Control (n=6)	Saline (25 mL/kg)	1.9 ± 0.2	2018 ± 40	834 ± 37	2.4	712 ± 27
Alcoholic extract (n=6)	100 mg/kg	4.1 ± 0.2	2987 ± 102	817 ± 28	1.6	2108 ± 102
Aqueous extract (n=6)	100 mg/kg	5.2 ± 0.9	3422 ± 73	1948 ± 606	1.8	1916 ± 106
Furosemide (n=6)	100 mg/kg	4.4 ± 0.2	3217 ± 60	2082 ± 402	1.5	2452 ± 108

Values are represented as mean ± SD