Diuretic activity of the leaves of *Coleus aromaticus* Benth.

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Abstract: *The aqueous and ethanolic extract of leaves of Coleus aromaticus was evaluated for diuretic activity. Both extracts were evaluated by determination of urine volume and electrolyte concentration in albino rats. Results revealed that both the aqueous and ethanolic extract at dose 500mg/ kg showed significant diuretic activity by increasing the total volume of urine and concentration electrolyte. Furosamide (10mg/ kg) was used as reference drug while normal saline (0.9%) solution was used as control.*

Keywords: *Diuretic activity, Coleus aromaticus, Furosamide.*

Introduction

The leaves of *Coleus aromaticus Bentham* were used in the East Indian archipelago, mainly in cases of *aphthous stomatitis*. For this purpose the Dutch Pharmacopoeia Ed.V, introduced the Species antiaphthosae with *Coleus* leaves as an active component, because of their antiseptic qualities. Older research ascribed this activity to carvacrol and perhaps thymol. *Coleus aromaticus Benth*, (Lamiaceae), syn. *Coleus amboinicus* (Lour.) Spreng is commonly known as Indian / country borage.

It is a large succulent herb with aromatic leaves, found abundantly in India. The leaves of this plant are traditionally used for the treatment of severe bronchitis, asthma, diarrhea, epilepsy, renal and vesicle calculi and fever, it has been reported to exhibit antilithiotic [1,2] chemopreventive, antiepileptic and antioxidant [3,5] properties.

The present investigation was undertaken to confirm traditional medicinal use of the plant.

2.Materials and methods

2.1 Plant material

The plant material was collected from the plantation in the Medicinal Garden, School of pharmacy, Devi Ahilya Vishwavidhyalaya, Indore. The plant material was identified by a botanist, Dr.A.B.Sheerwani (Retd. Prof. and Head), Department of botany, Holkar Science College, Indore, and their voucher specimens were deposited in the Department of Pharmacognosy (No.C-04/HF), School of Pharmacy, Devi Ahilya Vishwavidhyalaya, Indore.

2.2 Extraction

The leaves were washed properly and cut into small pieces before being subjected to cold maceration for seven days. The solvents used for aqueous and alcoholic extraction were distilled water and 70% v/v ethanol in distilled water respectively. After seven days, the aqueous and alcoholic macerates were filtered through muslin cloth and concentrated using a rotary evaporator and dried in desicator.

2.3 Animals

Male Wister rats (150-200g) were obtained from the experimental animal house, School of life science, Devi Ahilya University, Indore. They were maintained under standard housing condition. The animals were given standard laboratory feed and water *ad libitum*. The study was cleared by Animal ethics committee. All the animals received humane care according to criteria outlined in the guide for the care and use of laboratory animals prepared by the national academy of the sciences and published by national institute of health.

2.4 Acute toxicity

Acute toxicity study was carried out according to Miller and Tainter methods in albino mice of either sex (wt.20-25gm.) were used (6). The LD_{50} dose of both aqueous and ethanolic extract of leaves of *Coleus aromaticus* in mice was found 500 mg/kg.

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Table-I - Diuretic activity of *Coleus aromaticus* Benth. Leaves extract.

Treatment	Dose mg/kg	Mean urine vol. (ml)	Electrolyte concentration Na^+	K^+	Cl^-
Normal	25ml./kg	2.41	60.36	57.22	70.28
Furosamide	10	4.67	91.38	80.26	95.25
Ethanolic extract	500	3.95	82.45	73.30	90.31
Aqueous extract	500	3.50	78.12	70.25	89.34

Values are mean ±SEM, *P0.01 when compared with control.

2.5 Evaluation of diuretic activity

The method of Lipschitz *et al*. (7) was employed for the assessment of diuretic activity. In this method, male rats weighing between 150-200 grams, deprived of food and water for 18 hours prior to the experiment were divided in four groups of six rats in each. The first group of animals, serving as control, received normal saline (25 ml/kg, p.o.); the second group received furosamide (10 mg/kg, p.o.) in saline; the third and fourth groups received the aqueous and ethanolic extract at dose 500 mg/kg, in normal saline. Immediately after administration, the animals were placed in metabolic cages (2 per cage), specially designed to separate urine and faeces, kept at room temperature 25±0.5°. The volume of urine collected was measured at the end of 5 h. During this period, no food and water was made available to animals. The parameters taken were the body weight before and after test period, total urine volume, concentration of Na+, K+ and Cl- in the urine.Na+ and K+ concentrations was determined by flame photometer(8) and Cl- concentration was estimated by titration(9) with silver nitrate solution (N/50).

2.6 Statistical analysis- All the data are expressed as mean ± SEM and analyzed by ANOVA followed by Dunnett's *t* -test (n=6).

3. Results and discussion

The present study indicates the aqueous and ethanolic extract of leaves of *Coleus aromaticus* at 500mg/kg, gave a mean urine volume of 3.50 and 3.95.Whereas aqueous and ethanolic extract produced urine with Na^+, K^+, and Cl^- content 78.12, 70.25, 89.34 and 82.45, 73.30, 90.31 respectively (table -I).

On the basis of above result, it can be concluded that the *Coleus aromaticus* leaves extract produced significant diuretic activity. However further studies are necessary to identify and isolate the active constituent responsible for its diuretic activity and also there is a need to elucidate its mechanism of action.

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