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COMPARISION OF DIURETIC ACTIVITY OF ETHANOLIC EXTRACT OF *AERVA LANATA* (Linn.) Juss. Ex. Schult & *AERVA TOMENTOSA* Forsk. Family: AMARANTHACEAE.

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ABSTRACT

The diuretic activity of concentrated ethanolic extract of *Aerva lanata* (Linn) & *Aerva tomentosa* Forsk on healthy albino rats were studied with frusemide as reference drug. The urine output increased with concentrated ethanolic extract of *Aerva lanata* only. In this case the level of electrolytes in urine also increased. But the diuretic activity was mild as compared to frusemide.

INTRODUCTION

Aerva lanata (Linn) ex Schult and *Aerva tomentosa* both belong to family Amaranthaceae .*Aerva lanata* is an erect or prostate, hoary tomentose herb found throughout tropical India[1] while *Aerva tomentosa* is a suffruticose, hoary-tomentose found mainly in Punjab and Rajasthan[2, 3] .The flowering time of *Aerva* species is August to October. According to Ayurveda, the plant is diuretic and useful in lithiasis. The herb is also anthelmintic, demulcent and used in strangury. The traditional healers of Chattisgarh use *Aerva* in treatment of joint pains externally with other herbs. The flowers are also used for removal of kidney stones and in gonorrhea .The ethanolic extract of aerial parts of both species has been studied for its diuretic activity.

MATERIALS AND METHODS

Both the herb were collected in the month of September – October 2005 and authenticated by **Advisor,** (Technology transfer & Implementation), B.I.T., Mesra, Ranchi .After authentication mature plants were collected in bulk; shade dried and then milled into coarse powder by a mechanical grinder. Then powdered plant materials were extracted with ethanol (95%) in a Soxhlet extractor for 18 to 20 hrs. separately. The extracts were centrifuged and concentrated under reduced pressure at low temperature (40-50^{0}C) which yield 0.24 % w/w[4] and 0.09 % w/w extractive value of *Aerva lanata* and *Aerva tomentosa* respectively.

ACUTE TOXICITY:

The concentrated extracts were subjected to toxicity studies by standard method using propylene glycol as solvent. It was found that up to 300 mg/kg dose range of the concentrated form was non-toxic when administered intraperitoneally

DIURETIC ACTIVITY

The concentrated ethanolic extracts were evaluated for the diuretic activity according to the method of Lipschitz et.a (1943).Albino rats of either sex were deprived of food and water 18 Hrs.prior to the experiment & and were divided into six groups of six each. All animals were hydrated with normal saline at a dose of 25ml/Kg orally. One group served as control while the other five groups received either the standard drug frusemide (20mg/Kg) or the test concentrate of *Aerva* species (200 & 300 mg/kg) intraperitoneally after 30 minutes of saline administration. The animals were kept in metabolic cages specially designed to collect urine and retain faeces. The volume of urine collected was measured at the end of 6 Hrs. The Na^+ and K^+ ion concentration in the urine samples was determined using Flame Photometer (Elico). The Cl^- ion concentration was found by titration of samples with 0.02 N $AgNO_3$ using 5 percent Potassium chromate solution as indicator. The results obtained were compared with the control and analysed by Student's 't' test.

CONCLUSION

The concentrated alcoholic extract of *Aerva lanata* showed significant increase in volume of urine output, urinary sodium, potassium and chloride levels. The diuretic activity was only found in alcoholic extract of *Aerva lanata* not in *Aerva tomentosa* as compared to standard diuretic drug fruseamide.

TABLE—1
DIURETIC ACTIVITY OF CONCENTRATED ETHANOLIC EXTRACT OF *AERVA LANATA* AND *AERVA TOMENTOSA* IN RATS.

Group	Dose (mg/kg)	Volume of Urine (ml)a	Na^+ (µmol/lt)	K^+ (µmol/lt)	Cl^- (µmol/lt)
Control	---	12.70±0.12	0.83±0.000**	2.52±1.90	7.88±0.01
Frusemide	20mg/kg	47.43±0.22*	11.76±2.42	2.66±1.92	17.52±0.008
Concentrated Alcoholic Extract of *A.lanata*	200mg/kg	12.46±0.11	4.34±0.00*	8.30±0.00***	11.56±0.118
	300mg/kg	28.21±0.42*	14.00±000*	6.68±0.14	23.04±0.00*
Concentrated Alcoholic Extract of *A.tomentosa*	200mg/kg	11.14±0.41*	0.71±0.00*	2.13±0.01	6.29±0.01*
	300mg/kg	12.86±0.19*	0.84±0.00*	2.53±0.01	8.02±0.02*

[a] *collected for 6 Hrs.after treatment.*
**values are Mean ± S.E.M. (n=6)*
*P ‹ 0.0001, **P ‹ 0.001, ***P ‹ 0.01Vs Control (Saline, 25mg/Kg, intraperitoneally.)
Student's't' test.

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