



DIURETIC ACTIVITY OF AQUEOUS AND ALCOHOLIC EXTRACTS OF *Wrightia tinctoria*.

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ABSTRACT

Water and alcoholic extract of leaves of *wrightia tinctoria* (Apocyanacea) were subjected to various phytochemical analysis to identify carbohydrates, phytosterols, tannins and lignin. Both the extracts were investigated for diuretic activity. Total urine volume and the concentration of sodium, potassium and chloride ions in the urine those Parameters are taken into account during the experimental work on each rat. The extracts showed a potent diuretic effect with increase in electrolyte concentration in urine, when compared with standard drug (frusemide) in albino rats.

Key Words: Diuretic activity, *Wrightia tinctoria*.

INTRODUCTION

Diuretics are commonly used for management of hypertension and electrolytic balance. *Wrightia tinctoria* is belongs to Apocyanacea family. (Kirtikar KR *et al.*, 1981). It is mainly used to folk medicine for various treatments like Anti-Inflammatory (Sethuraman V *et al.*, 1984), Jaundice Refrigerant, and Skin disorders etc. The present study was to investigate the preliminary phytochemical screening of the various extracts of *Wrightia tinctoria* leaves were studied for diuretic activity.

MATERIAL AND METHODS

The plants were collected from Tamilnadu in and around Virudhunagar district (Watrap) in the month of June and it was authenticated by taxonomist and voucher specimens of the plant were deposited at college herbarium for future references. The freshly collected plant was washed and sun-dried and coarsely powdered until able to pass through sieve number 40.

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Preparation of extract

The standardized coarse powder of plant material was subjected to soxhlet extraction using distilled water and alcohol as the solvent. The filtrate obtained was dried to get the crude extract. This crude extract was used for the further investigation (Copper and Gunns, 2005).

Preliminary phytochemical screening:

The Dried extracts of *Wrightia tinctoria* were investigated by various chemical analysis (Harbore JB, 1973).

Diuretic activity:

Male albino rats of body weight 120-180gm were selected for the assessment of diuretic activity (Gerhard Vogel, 2002). During acclimatization the animals were observed for ill health. Animals demonstrating signs of spontaneous disease or abnormality prior to the start of the study were eliminated from the study. The experiments are done according to the CPCSEA guidelines and approved by the Institutional Animal Ethical Committee Rats were divided into five different groups each groups contain six rats. All the rats

were kept in good experimental condition and deprived of food for 18 hours before the experiments. 5ml/kg of water (10mg/kg) were served as control and standard drug respectively. 250mg/kg and 500mg/kg of aqueous and alcoholic extract of *Wrightia tinctoria* were administered orally to the animal in each group. Immediately after dosing, the animals were placed in metabolic cages specially designed to separate urine. The urine was collected and measured after 5 and 24 hours. During this period no water and food was made to available to the animals. The urine volume was measured with graduated measuring cylinder. The parameters taken for each individual rat's urine were determined. The urine volume, concentration of sodium and potassium were estimated by using flame photometer (Jeffery GH *et al.*, 1989) while chloride concentration was estimated by titration method. The mean urine volumes were determined and diuretic potency was assessed by comparison of urine excretion due to extracts with respect to the standard drug frusemide (Hemamalini *et al.*, 2007)

Values were shown as mean \pm SEM (Woodson 1987). The results were statistically analysed using One way ANOVA (Lipschitz, 1979) followed by Dunnett's test. $P \leq 0.05$ was considered significant.

Table-1 Diuretic activity of various extracts of *Wrightia tinctoria*

Extract/drug	Dose mg/kg	Urine volume (ml)	Electrolyte Concentration in PPM		
			Na ⁺	K ⁺	Cl ⁻
Normal Saline	5	8.7 \pm 0.5	95.8	57.9	103.4
Aqueous	250	23 \pm 0.5	85.8	96.2	110.3
Aqueous	500	27 \pm 0.5	108.8	123.3	124.9
Alcohol	250	21 \pm 1.0	72.8	93.3	116.6
Alcohol	500	25 \pm 1.0	98.8	87.9	138.4
Frusemide	10	25 \pm 0.5	126.7	119.6	158.8

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were given orally to the rats before administration of drug or extracts. Normal saline (0.9%) and frusemide

RESULTS AND DISCUSSION

Preliminary phytochemical investigation of aqueous and alcoholic extract of *Wrightia tinctoria* showed the presence of carbohydrates, phytosterols, tannins and lignin. The result of diuretic activity showed that the alcoholic and aqueous extract of *Wrightia tinctoria* at 250 and 500 mg/kg caused a dose dependent increase of urinary water and electrolytes concentration in normal rats. The results of 500mg/kg treated group showed significant change in chloride ion and urine volume ($P \leq 0.01$) compared with control group. In the present study, both alcoholic and aqueous extract treated groups at different doses (250mg/kg and 250mg/kg) showed significant effect on urinary potassium ion concentration.

On the above results, it can be concluded that the extract produces diuretic effect with increase in electrolyte concentration in urine. Further studies are necessary to identify and isolate the active constituents responsible for the diuretic activity. These findings may provide a lead for further investigations of the overall pharmacological actions of *Wrightia tinctoria* in more appropriate model.