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DIURETIC ACTIVITY OF SIDDHA FORMULATION OF *SENKALUNEER CHOORANAM* ALBINO RATS

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ABSTRACT

The Siddha drug *Senkaluneer Chooranam* (SKC) is used in the treatment of *Piththa* Diseases (Including Hypertension). This study is evaluated the efficacy and safety of the Siddha drug *Senkaluneer Chooranam* (SKC) in Albino rats. The Siddha drug SKC its a diuretic effect is found out method in Lipschitz method using frusemide drug as standard.

The group – I (Controle Group) was given a normal saline, Group - II (Standard group) serves as standard received the Frusemide (20mg/kg) and the three test groups – III, IV, V were treated by *Senkaluneer Chooranam* (SKC) doses level of 100mg/kg, 200mg/kg, 300mg/kg respectively. Albino rats were kept in metabolic cages and 24 hours urine was collected. Total urine volume and urinary excretion of measured using a standard measuring cylinder. SKC has secreted dose dependant increase volume in total urine volume, when compare to control group. The test drug *Senkaluneer Chooranam* at the dose levels of 100mg/kg, 200mg/kg and 300 mg/kg, which its showed a statistically significant increase in the volume of urine with a dose dependent increase in the diuretic Urine volume to 10.28, 13.58 and 14.37 respectively. The drug also confirmed a significant increase in sodium excretion in comparison to control group. An increase ($p < 0.05$) in urinary excretion of potassium is also observed. The *Senkaluneer Chooranam* (SKC) treated rats showed high diuretic effect as compared to control but this effect is less than the frusemide (Group II). So, Senkaluneer Chooranam (SKC) is good diuretic activity.

KEYWORDS: *Senkaluneer Chooranam* (SKC), Herbal medicine, Frusemide, Hypertension

AIM OF THE STUDY

Aim of the study is to evaluate the diuretic activity, safety and efficacy of the Siddha drug *Senkaluneer Chooranam* (SKC) in Albino rats.

INTRODUCTION

The medicinal plant has important sources of unknown chemical substances with potential therapeutic effects. Now a day's World health organization report shows estimated that over 75% of the population in world still relies on plant derived medicines, usually obtained from traditional healers, for basic health-care needs.

Most clinical applications of diuretics aim to reduce extracellular fluid volume (edema) by decreasing total body NaCl content. Although continued administration of diuretic causes a sustained net deficit in total Na+, the time course of natriuresis is finite because renal compensatory mechanisms brings Na+ excretion in line with the Na+ intake, a phenomenon known as diuretic braking. Diuretics alter the excretion of other cations (e.g. K^+, H^+, Ca^{2+}, Mg^{2+}), anions (e.g. Cl^-, HCO_3^- and H_2PO_4) and uric acid. In addition diuretics may alter renal hemodynamics indirectly mediated by local prostaglandins synthesis.

Despite the popular use of this species as a medicinal plant, there are no data about the pharmacological effect of *Senkaluneer Chooranam* on diuretic activity. The aim of the present study is to evaluate the potential diuretic and natriuretic activities of *Senkaluneer Chooranam* in experimental animal.

MATERIAL AND METHODS

Experimental animals

Healthy male albino rats are using. Weighing 180 - 200 g was used for the study. The animals were maintained in polypropylene cages. Thay cages are standard dimensions at a temperature of 37 ± 1°C and standard 12h day/night rhythm. The animals were fed with rodent pellet diet (Hindustan Lever Ltd) and water (ad libitum). Period to the experiment, the animals were acclimatize to the laboratory conditions. This experimental study protocol was approved by Institutional Animal Ethical Committee (IAEC) constituted under CPCSEA.

Drug Treatment

The *Senkaluneer Chooranam* at the dose levels of 100mg/kg/bw, 200mg/kg/bw and 300 mg/Kg/bw was administered once daily for three consecutive days. Fursemide (20 mg/Kgbw) was used as standard for diuretic activity. Control group of animals (n=6) received normal saline (10 ml/Kg/bw).

Experimental design

The animals were divided into 5 groups each group contained 6 rats and were designed as followers.

- Group – I : Received only normal saline - 10ml/kg/bw
- Group – II : Received Fursemide - 20 mg/kg/bw
- Group – III : Received SKC - 100 mg/kg/bw
- Group – IV : Received SKC - 200 mg/kg/bw
- Group – V : Received SKC - 300 mg/kg/bw

Diuretic activity

Rats were fasted overnight and treated with vehicle, Fursemide and *Senkaluneer Chooranam* as stated above along with normal saline (10 ml/kg). The rats were kept in metabolic cages. The urine samples were collected for 24h (Whole day) in the rats, measured using a standard measuring cylinder. The amount of urine (in ml) collected for 24 h was compared and tabulated.

Natriuretic activity

Estimation of Sodium (Na) and Potassium (K) content of the urine samples of all groups of animals were done by using a laboratory model flame photometer. The ratio of Na^+/K^+ is calculated for Natriuretic activity. A value, greater than 2.0 indicates a favorable Natriuretic effect. Ratio greater than 10.0 indicates a potassium sparing effect.

Statistical analysis

The results were expressed as mean ± S.E.M. Statistical comparisons were made by means of newmann keuls multiple range tests. p values smaller than 0.05 was considered as significant.

TABLE NO - 01

DIURETIC ACTIVITY OF SENKALUNEER CHOORANAM (URINE VOLUME) IN 24 H

Group	Treatment	Urine Volume
I	Normal saline 10ml/kg	7.17 ± 0.57
II	Frusemide 20mg/kg	11.79 ± 0.97**
III	*Senkaluneer Chooranam* 100mg/kg	10.28 ± 0.69**

IV	*Senkaluneer Chooranam* 200mg/kg	13.58 ± 0.67**
V	*Senkaluneer Chooranam* 300mg/kg	14.37 ± 0.89**

Values are Mean ± SEM, n=6, **p<0.01.

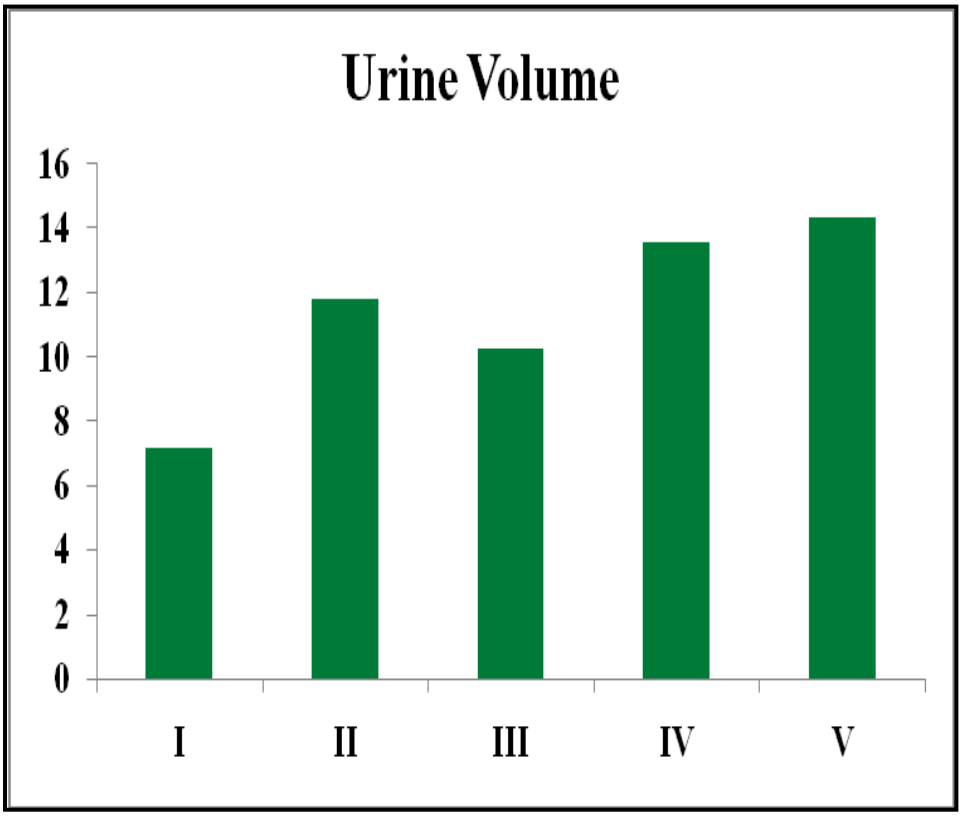


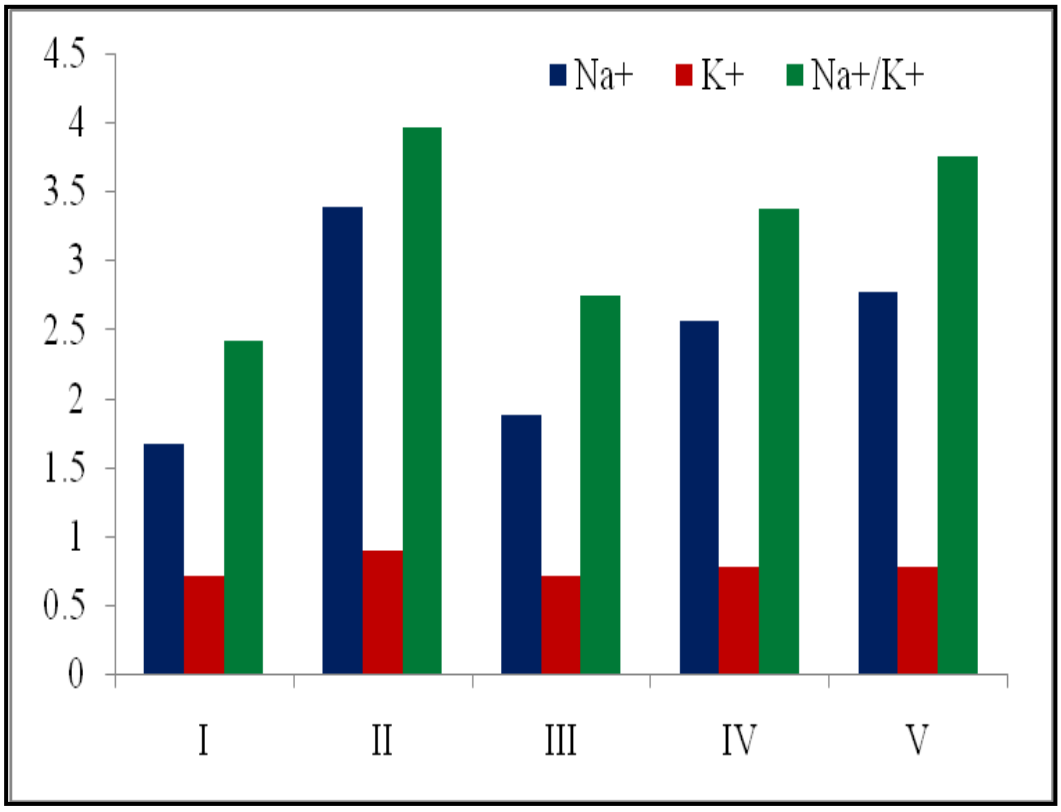
TABLE NO - 02

NATRIURETIC ACTIVITY OF *SENKALUNEER CHOORANAM*

Treatment	**Na+**	**K+**	**Na+/K+**
Normal saline 10ml/kg	1.67 ± 0.08	0.71±0.07	2.41
Frusemide 20mg/kg	3.38 ± 0.27**	0.89±0.05**	3.96
Senkaluneer Chooranam 100mg/kg	1.88 ± 0.17*	0.71±0.01ns	2.74
Senkaluneer Chooranam 200mg/kg	2.56 ± 0.19**	0.78±0.02ns	3.37

Senkaluneer Chooranam 300mg/kg	2.77 ± 0.27**	0.78±0.03ns	3.75

Values are Mean ± SEM, n=6, *p<0.05, **p<0.01, NS - not significant



RESULTS AND DISCUSSION

Table -1 show the urine volume collected in 24 h for all the groups. It is apparent that the group administrated with *Senkaluneer Chooranam* excreted more urine than the control groups. The *Senkaluneer Chooranam* at 100, 200 and 300 mg/kg concentrations in difficult group exhibited comparable better effect with that of the reference drug Fursemide 20 mg / kg and the results were interpreted statistically.

Table -2 shows the sodium and potassium content of the urine for all groups. The Sodium excretion was increased for Fursemide treated group statistically significant rise in Na+ excretion was also noticed for *Senkaluneer Chooranam* treated groups. The potassium content excreted in the urine was insignificant for all the groups. The Natriuretic effect was calculated by the formula Na^+ / K^+. It was found that the *Senkaluneer Chooranam* treated groups possess mediate Natriuretic effect. The present study showed that the *Senkaluneer Chooranam* significantly increases the urine output and excretion of urinary sodium and had no effect on the urinary potassium excretion. Diuretics have two separate connotations;

increase urinary par se and net loss of (electrolyte) and (saluretic). These two processes are involved in the repression of renal tubular reabsorption of electrolytes, water and low molecular weight organic compounds into the blood stream and a consequence; promote the formation of urine. An attempt to extrapolate the diuretic action of plant extract from rats to man using the activity of Fursemide in the organism as a guideline has been reported.

The data show that the *Senkaluneer Chooranam* has diuretic effect, Natriuretic effect but no potassium sparing effect and is as potent as Fursemide. This designates the use of *Senkaluneer Chooranam* as a diuretic agent based on a sound bio chemical process. Also the excretion of potassium ions was similar to the untreated group, which rule out the possibility of hypokalemia and associated toxicity.

CONCLUSION

From the above results, it is concluded that Siddha preparation *Senkaluneer Chooranam* showed significant diuretic activity. The diuretic effect on Siddha formulation *Senkaluneer Chooranam* in particular could be considered as a possible therapeutic value

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