



## EVALUATION OF COLEUS FORSKOHLII EXTRACT AS DIURETIC IN RATS MODEL

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### ABSTRACT

Diuretics are medications used to flush the system of excess water, which may alleviate symptoms of conditions including sciatica, kidney stones, lymphedema, premenstrual syndrome (PMS), gonorrhoea, liver clutters, and high blood pressure. Tea made from dandelion leaves has a beneficial effect on those with cystitis and other urinary tract infections, and it also helps with detoxification. The aforementioned findings show that coleus forskohlii extracts for the cautiously begun may be used to lessen the need of regular diuretic treatments such nephroprotective medications to maintain your body's salt, sodium, and water balance. Results from a preliminary study evaluating low doses of coleus forskohlii extracts showed the combination's efficacy and logic as a possible specialist to help your kidneys release more salt into your excrete.

**KEYWORDS:** Diuretics, coleus forskohlii and efficacy.

### 1. INTRODUCTION

A diuretic may be a sedate that fortifies the kidney to discharge salt and water by means of the urinary tract. Diuretics are drugs that fortify urination, which makes a difference the body get freed of abundance water, salts, poisons, and metabolic squander items so that the body can keep up a sound water and ionic adjust. Na<sup>+</sup> isn't the as it were cation (K<sup>+</sup>, H<sup>+</sup>, Ca<sup>2+</sup>, and Mg<sup>2+</sup>) or anion (Cl<sup>-</sup>, HCO<sub>3</sub><sup>-</sup>, and H<sub>2</sub>PO<sub>4</sub><sup>-</sup>), or corrosive (uric corrosive) that diuretics may influence. Diuretics may moreover have a circuitous impact on renal hemodynamics enactment.<sup>[1]</sup>

They offer assistance the body get freed of the liquid buildup (edoema) within the tissues that happens as maladies advance. A few therapeutic conditions may be made a difference by diuretics, counting tall blood weight, liquid maintenance, edoema, swollen lower legs, heart disappointment, hypertension, liver cirrhosis, kidney illnesses, pneumonic and systemic edoema, and cystitis. They diminish Na<sup>+</sup> and (regularly) Cl reabsorption from the filtrate, with the expanded excretion of NaCl contributing optionally to the generally increment in water misfortune (natriuresis). This may be fulfilled in two ways: either specifically, by acting on nephron cells, or by implication, by modifying the composition of the filtrate. Diuretic Subtypes Carbonic-anhydrase inhibitors like acetazolamide and dichlorphenamide Circle Furosemide and Ethacrynic corrosive are illustrations of diuretics.<sup>[2]</sup>

### AIM AND OBJECTIVES

**AIM:** To evaluate the possible diuretic effect from the leaves of Coleus forskohlii (Plectranthus barbatus) in rats.

### OBJECTIVE

- The purpose of the present study is to determine the Diuretic effect of ethanolic extracts of Coleus forskohlii leaves in increasing order of their polarity.
- The diuretic properties of ethanolic extracts of the Coleus forskohlii were evaluated by determination of urine volume and electrolyte concentration in male albino rats.
- This experiment is used in determining the effective diuretic activity by knowing its Sal uretic, Natriuretic and Carbonic Anhydrase inhibition produced by the plant.

### METHODOLOGY

#### EXPERIMENTAL DESIGN

Group I (control): receives vehicle CMC 1% in 0.9% NaCl solution per 100g body weight Group II (standard): receives urea 1g/kg standard drug via oral route in vehicle.

Group III (test I): receives test dose of the drug 100 mg/kg in vehicle.

Group IV (test II): receives test dose of the drug 200mg/kg in vehicle.

Group V (test III): receives test dose of the drug 400mg/kg in vehicle After that the rats are treated with saline 15ml/kg, Urine excretion recorded after every 5hrs upto 24hrs of duration. From this experiment, the

lipschitz value, which is the mean of the test group and urea treated standard group, is determined, and also diuretic index and urine volume can be estimated.

## RESULTS

Chemical constituent	Test	Extract
Tannins	Ferric chloride test	+
	Lead acetate test	+
	Acetic acid sol.	+
	Dil. Iodine sol.	+
Alkaloids	Mayer's test	+
	Dragendroff's test	+
	Hager's test	+
	Wagner's test	+
Glycoside		
<b>A. Cardiac glycosides</b>	Baljet's test	+
	Legal's test	-
	Keller-killiani test	+
	Liebermann's test	-
<b>B. Steroids</b>	Salkowski test	-
	Liebermann-burchard test	-
	Liebermann's test	-
<b>C. Saponins</b>	Foam test	-
<b>D. Flavonoids</b>	Schinoda test	-
	Lead acetate test	-
	NaOH test	-
<b>E. Anthraquinones</b>	Borntrager's test	+
	Modified-borntrager's test	+

### Preliminary Tests

#### Acute Toxicity Study

The relative organ weight of rats treated with a dose of extract

Organs	Control	Extracted material (4000 mg/kg)
Heart	0.49 mg/kg	0.51 mg/kg
Liver	3.45 mg/kg	3.49 mg/kg
Spleen	0.46 mg/kg	0.48 mg/kg
Kidney	0.89 mg/kg	0.92 mg/kg
Lungs	0.74 mg/kg	0.79 mg/kg

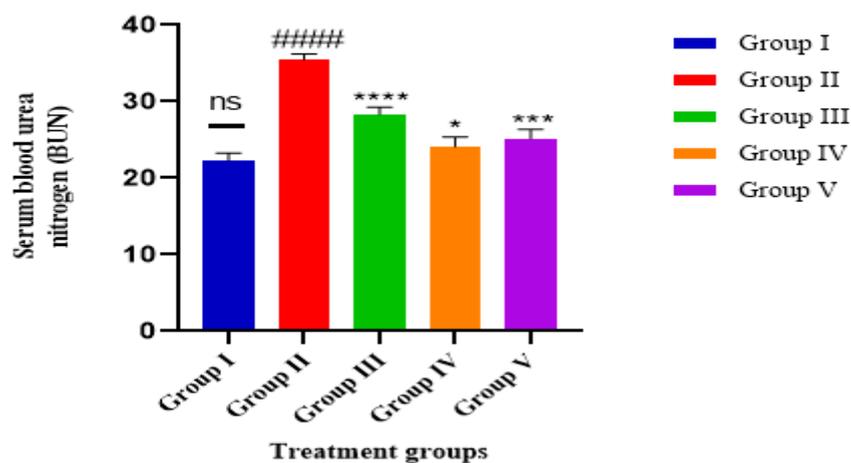
### Acute Toxicity Study

#### Serum Blood Urea Nitrogen (BUN)

Grouping of animals	Serum blood urea nitrogen (BUN)
Group 1	21.58
Group 2	34.89
Group 3	27.64
Group 4	23.14
Group 5	24.27

#### Serum Blood Urea Nitrogen (BUN)

#### Serum Blood Urea Nitrogen (BUN)

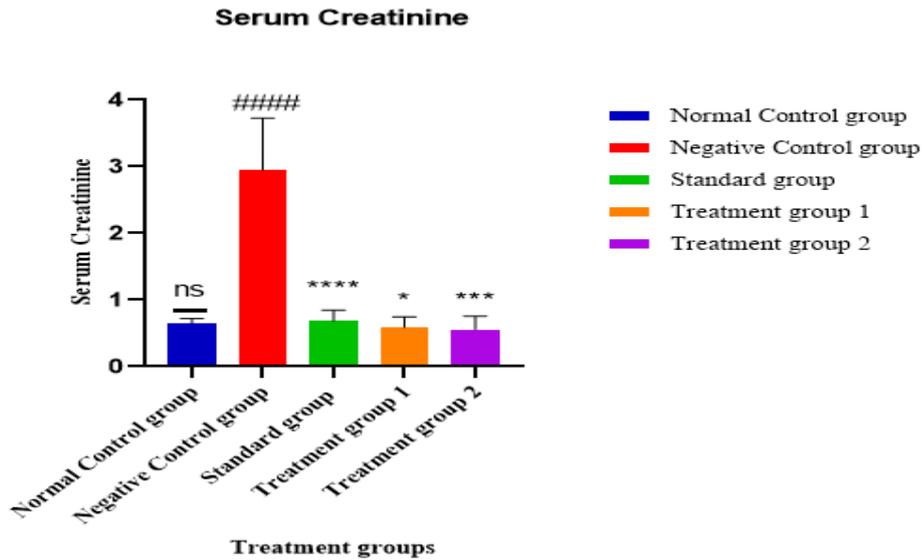


#### Serum Blood Urea Nitrogen

#### Assessment of Serum Creatinine level

Grouping of animals	Serum Creatinine
Group 1	0.59
Group 2	2.39
Group 3	0.57
Group 4	0.48
Group 5	0.42

Serum Creatinine

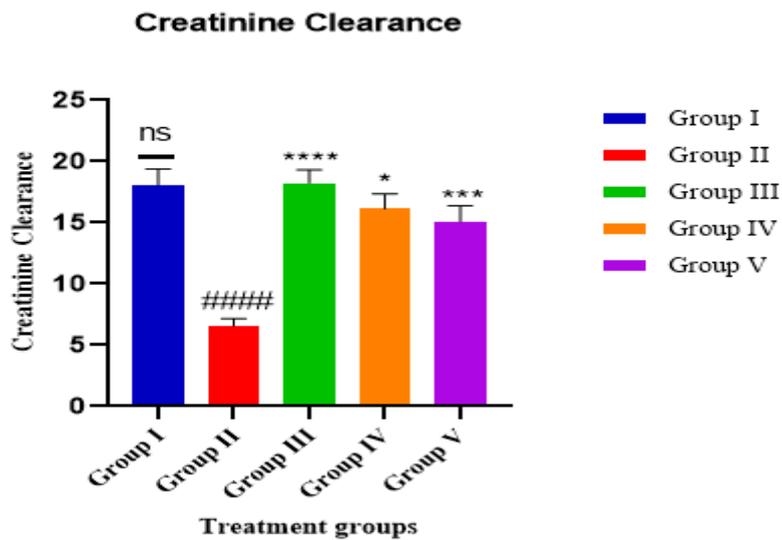


Serum Creatinine

Assessment of creatinine clearance.

Grouping of animals	Creatinine Clearance
Group 1	17.15
Group 2	6.12
Group 3	17.46
Group 4	15.25
Group 5	14.17

Creatinine Clearance

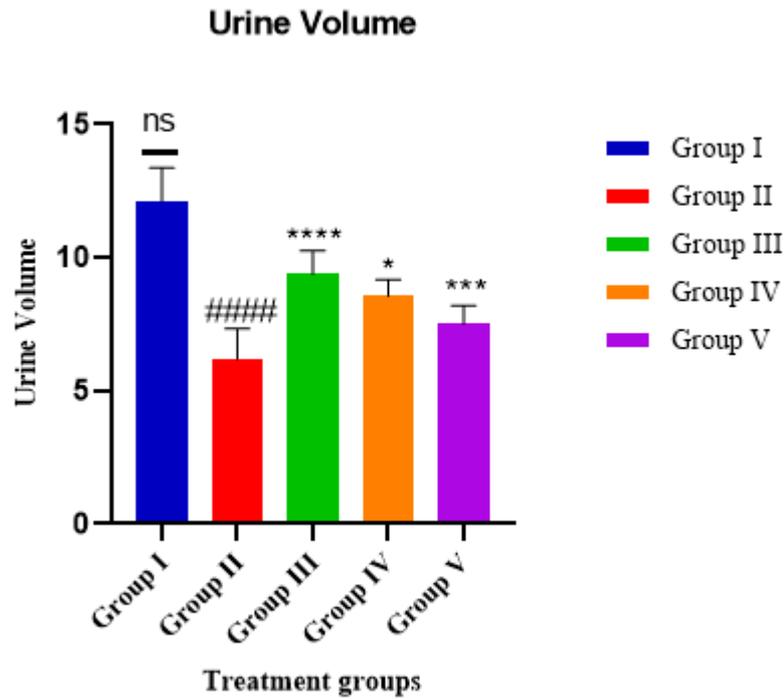


Creatinine Clearance

Assessment of urine volume

Grouping of animals	Urine Volume
Group 1	11.23
Group 2	5.38
Group 3	8.77
Group 4	8.12
Group 5	7.02

Urine Volume

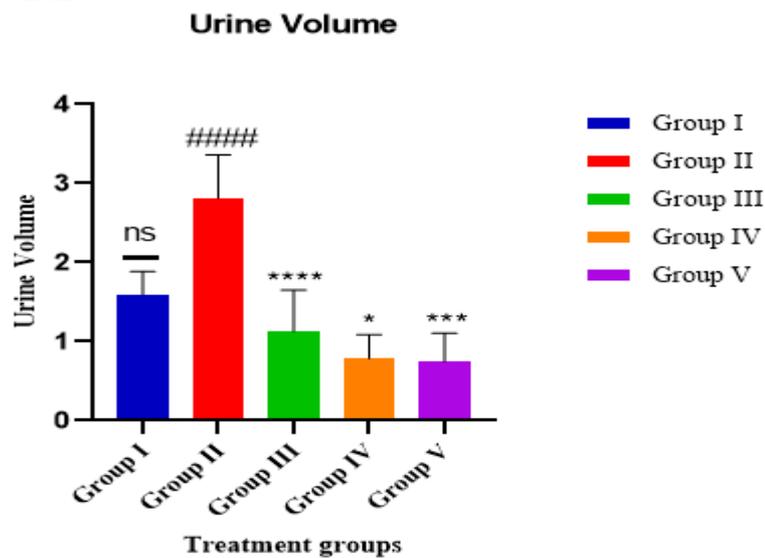


Urine Volume

Abnormal Urinary Albumin Content Test

Groups	Urinary Albumin Content
Group 1	1.39
Group 2	2.42
Group 3	0.76
Group 4	0.57
Group 5	0.49

Urinary Albumin Content



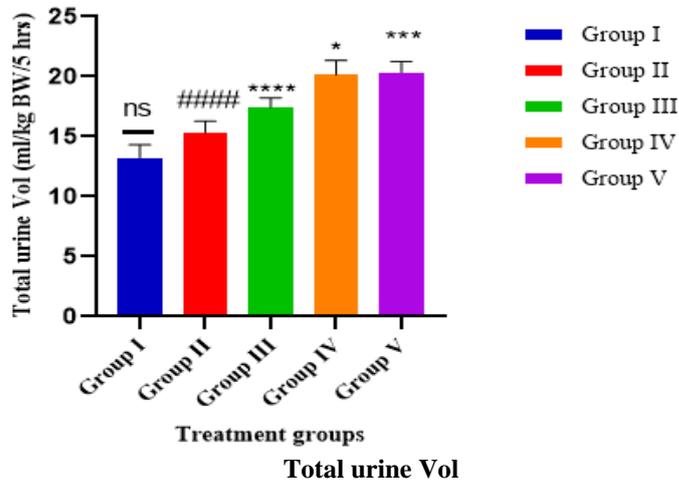
Urinary Albumin Content

**LIPACHITZ TEST**

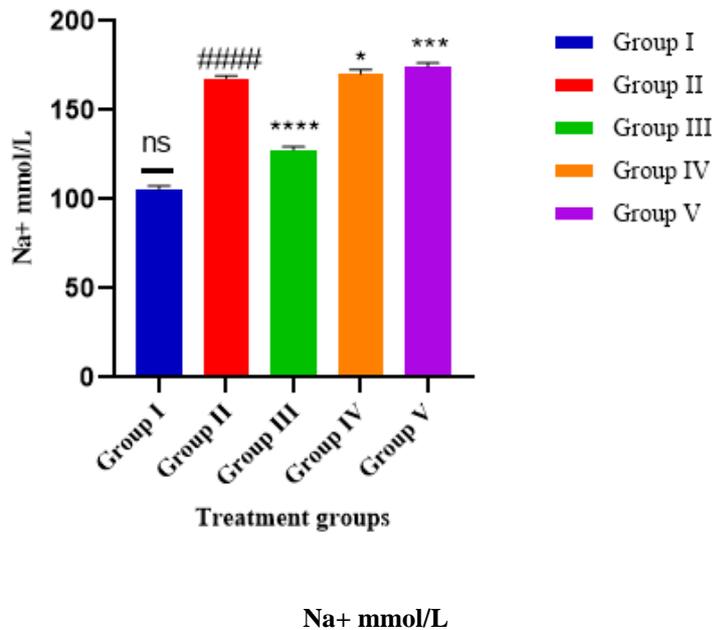
Groups	Total urine Vol (ml/kg BW/5 hrs)	Na+ mmol/L	K+ mmol/L	Cl- mmol/L
Group 1	12.49	103.87	45.63	73.48
Group 2	14.67	166.67	82.39	122.74
Group 3	16.89	126.48	63.77	94.46
Group 4	19.33	168.73	78.92	105.56
Group 5	19.74	172.88	87.59	116.79

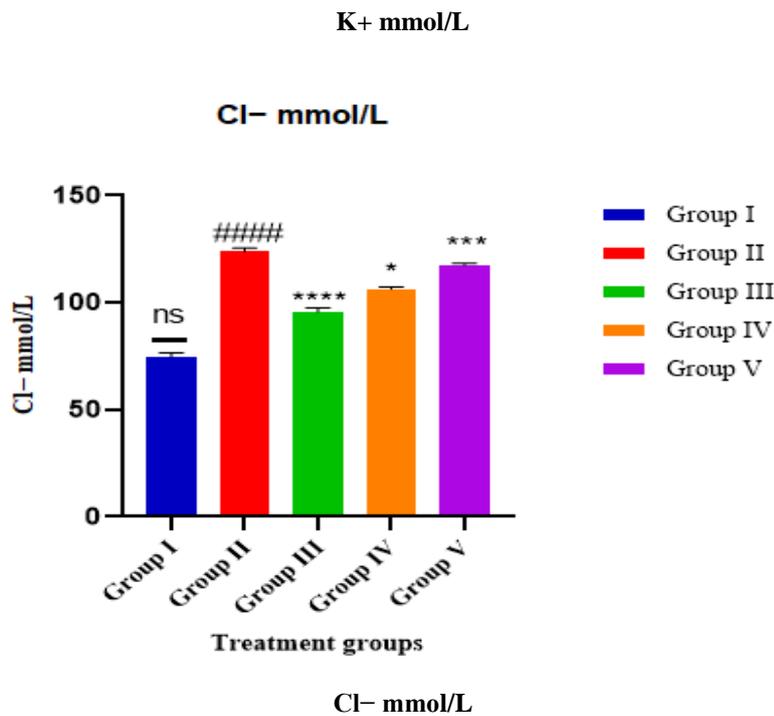
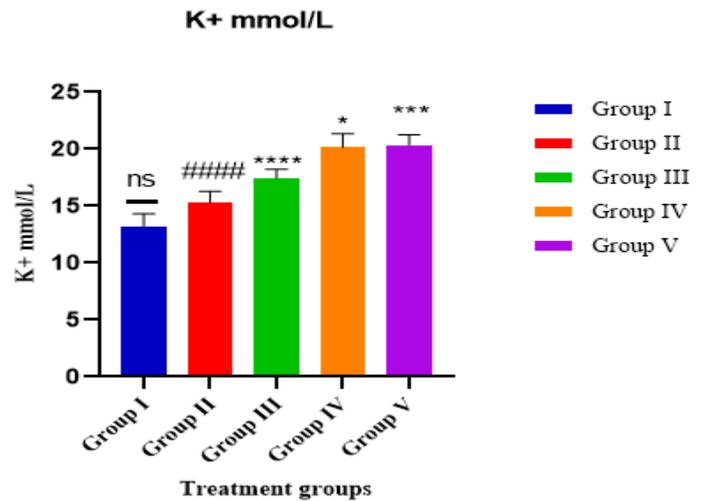
**LIPACHITZ TEST**

**Total urine Vol (ml/kg BW/5 hrs)**



**Na+ mmol/L**



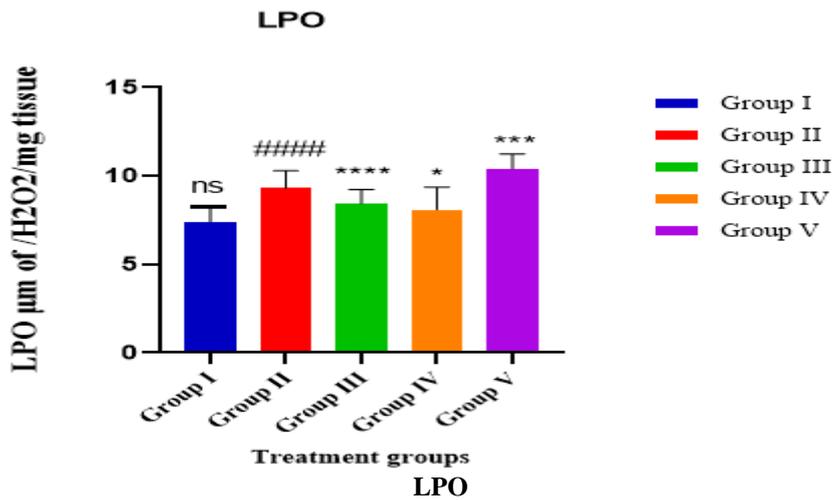


**Lipid Peroxide Test**

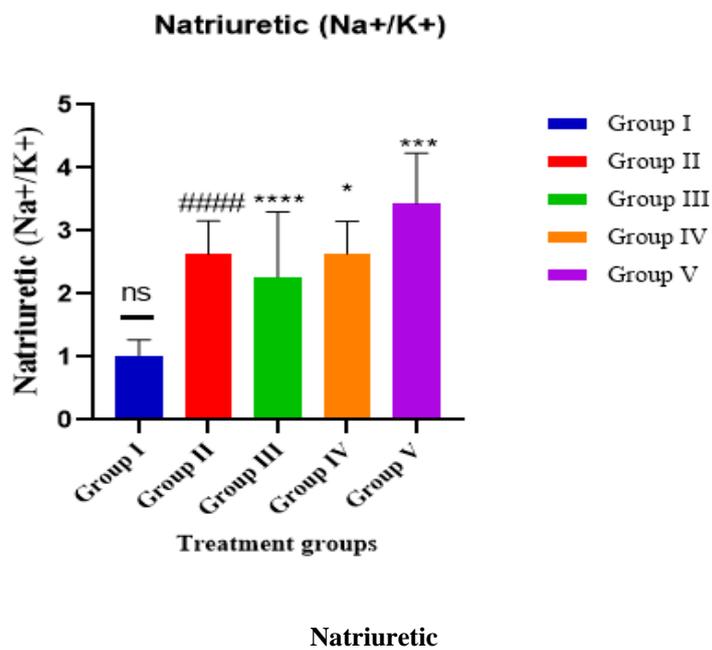
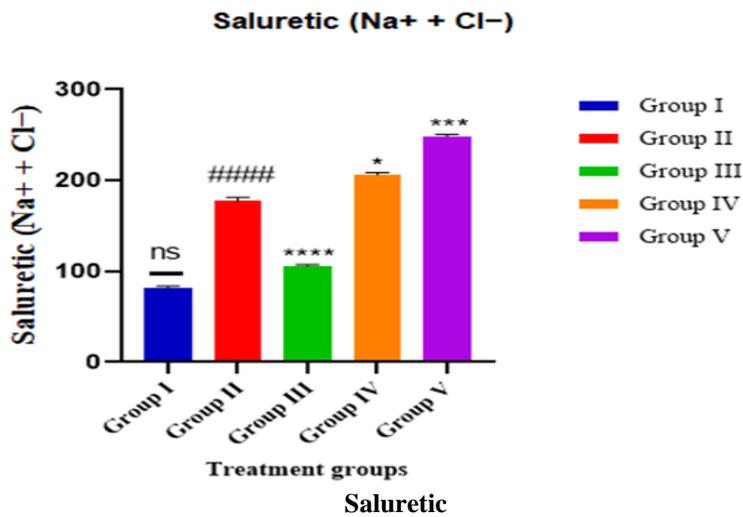
Groups	LPO
Group 1	6.8
Group 2	8.6
Group 3	7.9
Group 4	7.2
Group 5	9.8

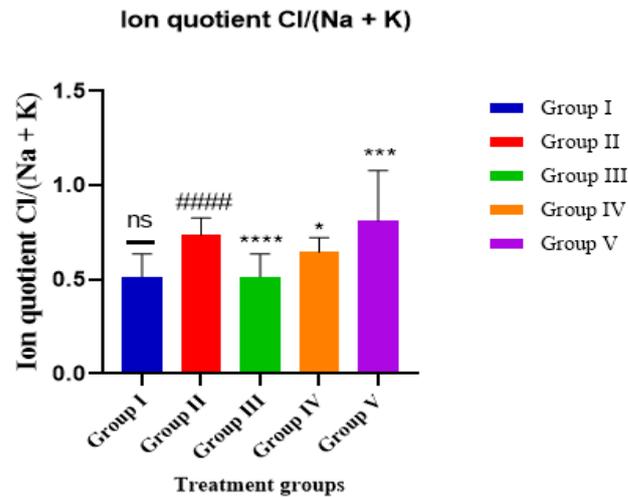
**Lipid Peroxide Test**

Groups	Saluretic (Na <sup>+</sup> + Cl <sup>-</sup> )	Natriuretic (Na <sup>+</sup> /K <sup>+</sup> )	Ion quotient Cl/(Na + K)	Saluretic Index	Natriuretic Index	Ion quotient Index
Group 1	79.68	0.85	0.43	3.1	3.9	1.2
Group 2	174.86	2.25	0.67	4.36	2.57	1.53
Group 3	104.72	1.54	0.43	2.35	2.26	1.13
Group 4	204.94	2.27	0.59	6.35	2.57	1.39
Group 5	246.83	2.86	0.62	8.38	3.56	1.42

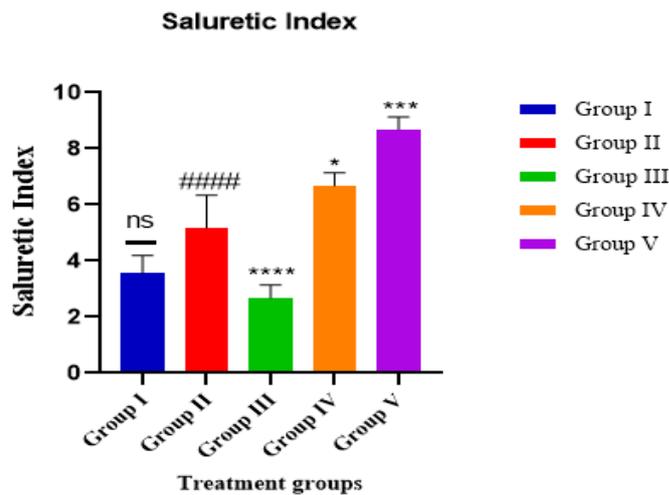


**Diuretic Activity**

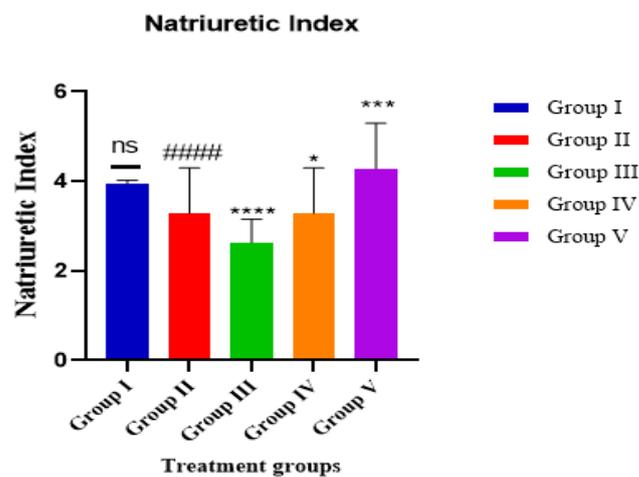




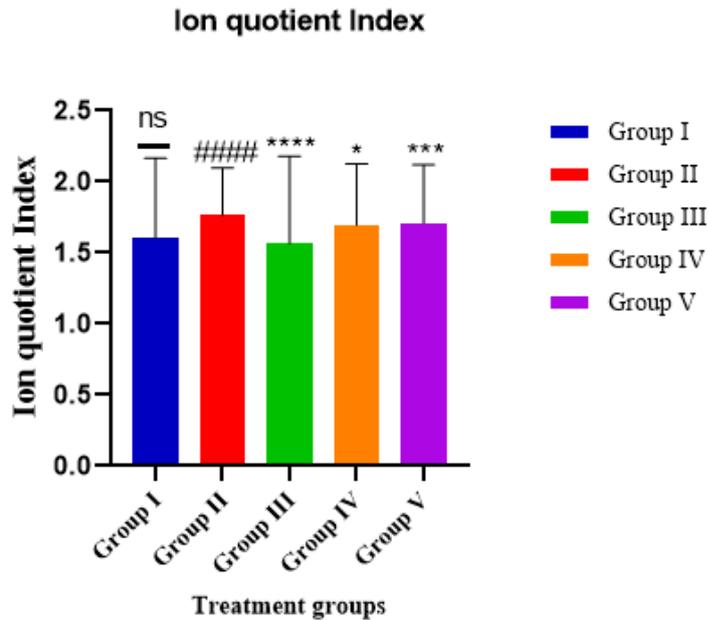
Ion quotient



Saluretic Index



Natriuretic Index



### Ion quotient Index

#### DISCUSSION

Diuretics are operators which act on kidney to advance the excretion of sodium and water in pee. They serve to freed the body of abundance liquid (edema) that collects within the tissues owing to different infection states. Diuretics are included a few obsessive condition such as Lower tall blood weight, Decrease liquid maintenance, edema, swollen lower legs, give alleviation from the torment, burning sensation related with cystitis, Heart Disappointment, Liver Cirrhosis, Kidney Illnesses, Aspiratory and Systemic Edema. Diuretics play a critical part within the administration of oedema and hypertension. The lean plummeting appendage of Loop of Henle permits osmotic water reflection because it is profoundly penetrable to water and impermeable to solutes.

Diuretic action of *Mangifera indica* bark extricate was considered by Shree devi. Hypertension is considered one of the foremost genuine wellbeing concerns. Diuretic ponder uncovered that  $\text{Na}^+/\text{K}^+$  proportion was higher in fluid extricate and taken after by ethanol and ethyl acetic acid derivation extricates. Nourishments like salt and sugar cause the body to hold impressive liquids, which may lead to bloating and water maintenance. Diuretics are endorsed for individuals enduring from edema – accumulation of liquids within the body tissues.

Individuals enduring from tall blood weight or heart infections may be endorsed diuretic. Ladies enduring from PMS side effects such as bloating are regularly exhorted to require diuretics. Diuretics can help in expulsion of overabundance liquids from the body and help in treating of sciatica, kidney stone, lymphatic

swelling, PMS, gonorrhea, liver clutters and tall blood weight. Dandelion leaf tea aids in detoxification and features a advantageous impact on those enduring from cystitis and urinary tract contaminations. Cabbage is known to help breakage of greasy stores, particularly around the stomach locale.

Blackcurrants combine a diuretic impact with a tall level of potassium. Chives are a satisfying expansion to a serving of mixed greens and contain more than 80% water. Celery contains a tall concentration of Calcium in a prepared to utilize frame. Fennel may be a valuable vegetable utilized in expansive amounts by the Latin societies. Garlic has, it may be a characteristic diuretic nourishment that helps breakage of fat and other fabulous properties.

#### CONCLUSION

The previously mentioned discoveries illustrate that *coleus forskohlii* extricates for the tentatively initiated may be utilized to reduce the require of ordinary diuretic treatments such nephroprotective drugs to keep your framework supplied with salt, sodium, and water. Little dosages of *coleus forskohlii* extricates were assessed in a preclinical ponder, and the comes about demonstrated the combination's adequacy and common sense as a potential specialist to assist your kidneys discharge more salt into your excrete.

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