



PHARMACOLOGICAL STUDY OF *BORASSUS FLABELLIFER* ON DIURETIC ACTIVITY USING ANIMAL MODELS

Syeda Zehra Banu Mahmoodi*, Noorul Marwa, Syed Ahmed Hussain and Amreen Sultana

Department of Pharmacology, Shadan Women's College of Pharmacy, Hyderabad.

***Corresponding Author: Syeda Zehra Banu Mahmoodi**
Department of Pharmacology, Shadan Women's College of Pharmacy, Hyderabad.
DOI: <https://doi.org/10.17605/OSF.IO/MJ79K>

Article Received on 06/11/2020

Article Revised on 26/11/2020

Article Accepted on 16/12/2020

ABSTRACT

The following study project illustrates the diuretic investigation impact of *Borassus flabellifer* on Furosemide - diuretic rat model ulcers. In all groups diuretic effects were contextual. The investigating operation was correlated with Moderate tubular dilatation and degeneration along with tubular inflammation noticed. The above results can be inferred that the *Borassus flabellifer* -detailed extract against in the rat model can be called an adjuvant in diuretic care that can greatly reduce the need for standard measures such as Diuretic drugs, help rid your body of salt sodium and water. The efficacy and feasibility of the long-term usage of this sedate as a potential agent helping your kidneys release more sodium into your urine have been demonstrated in planned clinical procedure in the assistance of lower measurements of the detailing *Borassus flabellifer* extract.

KEYWORDS: diuretic activity, *Borassus flabellifer* extract and Furosemide.

INTRODUCTION

Ever since the birth of humankind, there has been a relationship between life, malady and plants. Primitive men begun examining infections and medicines. There's no reflect that individuals in old set intrigued engineered medicament for their aliments but they tried to form interest of the things they may delicately obtain. The foremost conventional dress they seem discover was there in encompassing i.e. the sapling and creatures. They set out on utilizing plants and build up that the larger part of plants was reasonable as nourishment, where as other were either noxious or medicinally valuable.

By their involvement, this information of home grown cures was exchanged to era as family pharmaceutical. So the history of home grown medicine is similarly ancient as human history. Most of these plant-derived drugs were initially distinguished through the subject of conventional cures and people information of innate individuals and a few of these might not be substituted in spite of the colossal advance in manufactured chemistry. Subsequently, plants can be portrayed as a major source of solutions, not just as separated dynamic standards to be doled out in standardized dose shape but too as unrefined drugs for the populace. Cutting edge solutions and home grown medications are complimentary being utilized in ranges for wellbeing care program in different creating nations counting India.

AIM AND OBJECTIVES

AIM: The present study has been pointed for the assessment of diuretic action of Herbal extricate that has not been investigated by utilizing Albino mice as exploratory animals.

OBJECTIVES

1. Collection and Authentication of plants
2. Plants extraction by Maceration technique
3. Phytochemical screening of plants
4. Confirmation of chemical constituents
5. Screening of Diuretic activity
6. Histopathological evaluation
7. Conclusion

MATERIALS AND METHOD

PLANT AUTHENTICATION

The dried leaves of *Borassus flabellifer* is obtained local areas and authenticated from Dr. A. Manohar Rao, Department of Horticulture, College of Agriculture, Rajendranagar, Hyderabad, Telangana, India.

EXPERIMENTAL ANIMALS^[7]

Rats: Grown-up male albino rats weighing between 100 to 200 gms needs to be utilized Nourishment and water ought to be cleared out accessible till the experiment started. During the explore which has got to be endured for five hours, no nourishment or water ought to be permitted. Each time at slightest one bunch of rats gotten urea, and others gotten theophylline, acetazolamide.

Each rodent to be prepared by regulating 25 ml/kg of 0.9% saline intraperitoneally. Medicate managed ought to be broken up within the saline infused for preparing the animal. Each group of six rats should be kept in a metabolic cage and urine collected free from feces. Urine volume must be recorded at the conclusion of five hours. With mersalyl 24 hour urine volume ought to be taken into consideration, and control urea volume ought to too be recorded for 24 hours. Six bunches of rats must be utilized with mersalyl, acetazolamide, theophylline and urea. Five or 24 hour urine volume ought to be communicated as rate of starting hydration. Urea will be taken as control and comes about and communicated as rate increment over control (urea) run simultaneously.

Rodent as a test creature for diuretic measures gives more reliable comes about, since as a result of utilizing creatures in a bunch, organic variety gets decreased altogether. It is conceivable to utilize diverse dosages of the same medicate in several bunches, at the side control bunches, and hence get exceptionally valuable information inside the space of many tests only. Rat, can and has been utilized for exact bioassays of unused diuretics. Extraordinary preferences of rodent strategy are, it is conservative, straightforward, solid, more reliable and as it were little sums of drugs are sufficient.

PHYTOCHEMICAL SCREENING OF EXTRACT^[8]

Phytochemical investigation has got to be drained the sence of steroids, triterpenoidal saponins and carbohydrates as major phytochemical constituents, and

PLANT PROFILE



The palmyra palm could be an exceptionally tall, single-stemmed evergreen palm tree that can inevitably reach a tallness of 30 meters. The unbranched stem can be up to 1 meter wide at the base, narrowing to 40 - 50cm at around 4 meters and from that point round and hollow; it is topped by a crown of up to 60 huge, solidly anticipating fan-shaped-leaves.

alkaloid and cardiac glycoside in slight amount. Tannins, flavonoids, anthraquinone and cyanogenicglycosides.

SCREENING METHODS

Estimations of Urinary Electrolytes

a. General Invivo parameters

- Urine volume

- Body weight

b. Serum biochemical parameters

- Serum Creatinine level

- Blood urea nitrogen (BUN)

c. Urine biochemical parameters

- Creatinine clearance

d. Oxidative stress parameters

- Malondialdehyde (MDA)

e. Enzymatic antioxidant parameter

- Superoxide dismutase (SOD)

- Catalase (CAT)

- Glutathione peroxidase (GPx)

f. Non enzymatic antioxidant parameter

- Reduced glutathione (GSH)



The tree is broadly misused in ranges where it develops and incorporates an exceptionally wide run of applications. Without a doubt, in India it is called the tree with 800 employments. It is developed in numerous tropical ranges for its natural product, sap and many other things. It is one of the foremost vital of the developed palms, in spite of the fact that it is falling out

of support since of the long time taken to bring an edit from seed to development (12 a long time or more). These days it is basically developed within the drier parts

of its topographical extend, where the sugar palm (*Arenga pinnata*) and the coconut (*Cocos nucifera*) cannot compete.

EXPERIMENTAL DESIGN

GROUPS	DRUGS	DOSE AND ROUTE
Group-1	Diuretic (Distilled water)	1mg / kg oral
Group-2	Diuretic + standard drug (Furosemide)	40mg / kg oral
Group-3	Diuretic + Test 1	100mg / kg oral
Group-4	Diuretic + Test 2	200mg / kg oral
Group-5	Diuretic + Test 3	400mg / kg oral





HISTOPATHOLOGICAL STUDIES^[13]

The impacts of diverse plant extricates on diuresis, electrolytes composition, and histopathological highlights of treated rats will be decided.

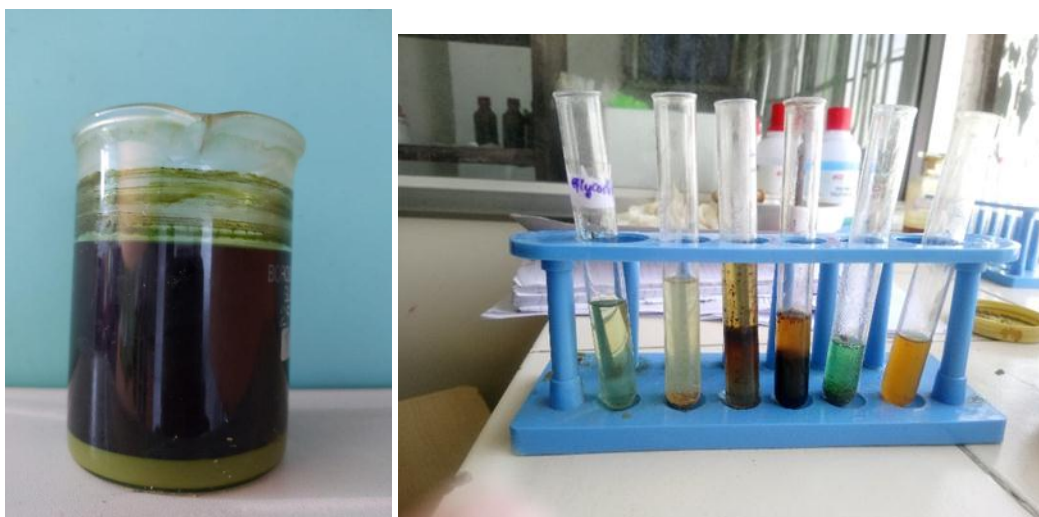
Purpose of Histopathological studies: Kidney histopathological thinks about will grandstand that the

introduction of medicate dosages may cause obsessive changes within the frame of decreased and mutilated glomeruli, widened tubules, edema exudate, gentle corruption, and penetration of provocative cells. However, the histopathological changes within the kidneys may or may not reach factual noteworthiness due to the tall intragroup varieties.

RESULTS

PHYTOCHEMICAL SCREENING

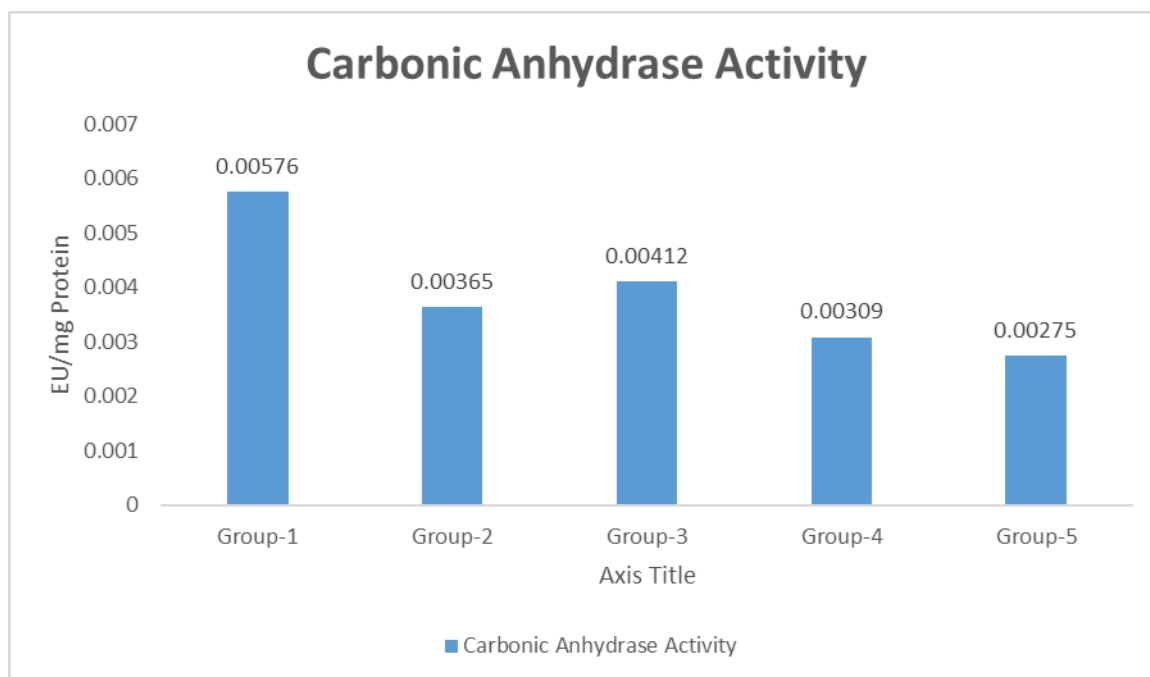




Chemical constituent	Test	Extract
Tannins	Ferric chloride test	-
Alkaloids	Mayer's test	+
Glycoside		
A. Cardiac glycosides	Baljet's test	-
	Legal's test	+
B. Steroids	Salkowski test	+
C. Saponins	Foam test	+
D. Flavonoids	Schinoda test	-
	Lead acetate test	-
	NaOH test	-
E. Anthraquinones	Borntrager's test	-
	Modified-borntrager's test	-
Carbohydrates	Molisch test	+
Proteins	Biuret's test	-
	Millon's test	-

Carbonic Anhydrase Activity

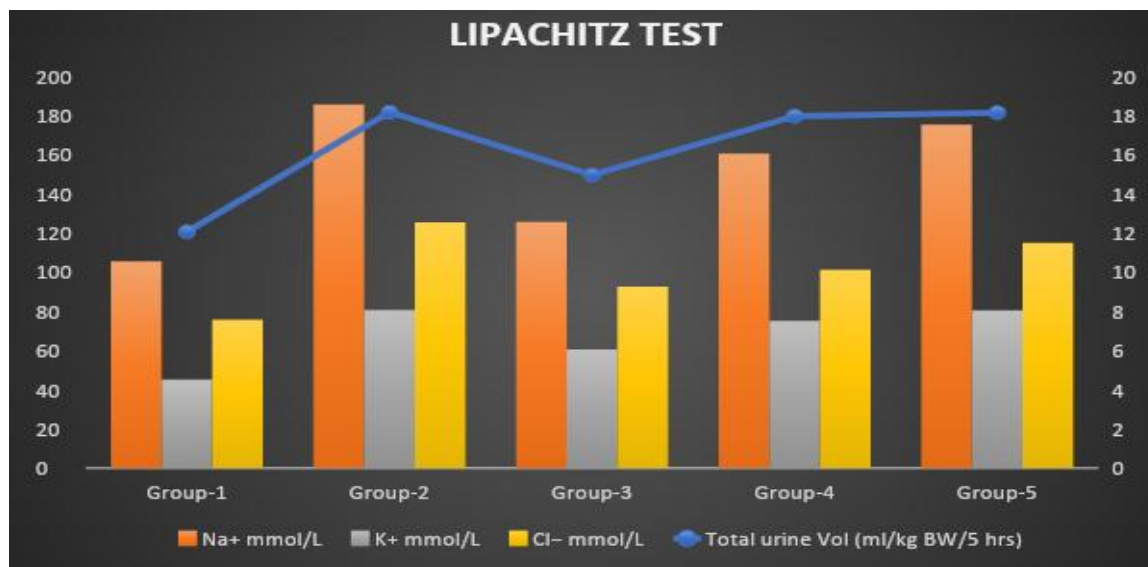
Groups	Carbonic Anhydrase Activity
Group-1	0.00576
Group-2	0.00365
Group-3	0.00412
Group-4	0.00309
Group-5	0.00275
SD	0.00117
SEM	0.00052



LIPACHITZ TEST



Groups	Total urine Vol (ml/kg BW/5 hrs)	Na+ mmol/L	K+ mmol/L	Cl- mmol/L
Group-1	12.05	105.40	45.15	75.65
Group-2	18.15	185.45	80.65	125.35
Group-3	14.95	125.50	60.55	92.45
Group-4	17.95	160.50	75.05	101.08
Group-5	18.13	175.25	80.45	114.95
SD	2.70	3.88	1.53	1.36
SEM	1.21	1.54	0.86	0.64



Stop-Flow Technique Clearance Method

Groups	Iohexol clearance (mL/min/100 g BW)	Inulin clearance (mL/min/100 g BW)	Plasma creatinine (mg/dL)
Group-1	0.779	0.875	0.430
Group-2	0.654	0.940	0.554
Group-3	0.276	0.715	1.378
Group-4	0.229	0.378	1.468
Group-5	0.223	0.292	2.258
SD	0.264	0.291	0.746
SEM	0.118	0.130	0.334



DISCUSSION AND CONCLUSION

DISCUSSION

The following study project illustrates the diuretic investigation impact of *Borassus flabellifer* on Furosemide - diuretic rat model ulcers. In all groups diuretic effects were contextual. The investigating operation was correlated with Moderate tubular dilatation and degeneration along with tubular inflammation noticed.

With Group 5 (High Dose), Group 5 reveals not only a higher volume pressure recording but also releases the maximum Na⁺ mmol/L attributable to diuretic effects. These findings are important.

The level of diuretic effects in extract classes (Group 3, Group 4, and Group 5) was found to be appropriate.

CONCLUSION

The above results can be inferred that the *Borassus flabellifer* -detailed extract against in the rat model can be called an adjuvant in diuretic care that can greatly reduce the need for standard measures such as Diuretic

drugs, help rid your body of salt sodium and water. The efficacy and feasibility of the long-term usage of this sedate as a potential agent helping your kidneys release more sodium into your urine have been demonstrated in planned clinical procedure in the assistance of lower measurements of the detailing *Borassus flabellifer* extract.

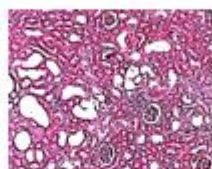
HISTOPATHOLOGICAL STUDIES^[13]

The effects of different plant extracts on diuresis, electrolytes composition, and histopathological features of treated rats will be determined.

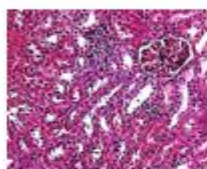
Purpose of Histopathological studies: Kidney histopathological studies will showcase that the exposure of drug doses may cause pathological changes in the form of diminished and distorted glomeruli, dilated tubules, edema exudate, mild necrosis, and infiltration of inflammatory cells. However, the histopathological changes in the kidneys may or may not reach statistical significance due to the high intragroup variations.

DIAGNOSIS:

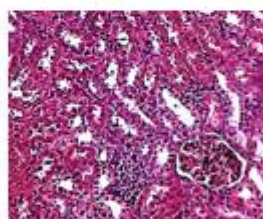
- A. BIOPSY AT 6:00: SHOWS MODERATE TUBULAR DILATATION AND DEGENERATION ALONG WITH TUBULAR INFLAMMATION NOTICED.
- B. BIOPSY AT 8:00: MULTI FOCAL TUBULAR REGENERATION NOTICED IN PRIMARY AND SECONDARY TUBULES IN CORTEX REGION OF KIDNEY.
- C. ENDOSCOPIC, CURETTINGS: MULTI FOCAL REGENERATED TUBULES APPEARED IN CORTEX REGION OF KIDNEY.



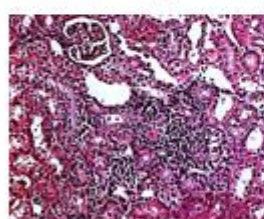
A (1)



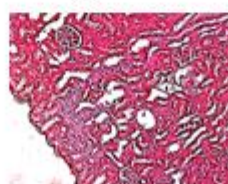
A (2)



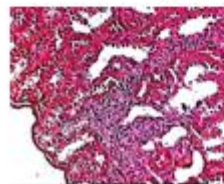
B (1)



B (2)



C (1)



C (2)

INFERENCES

The biopsy at 6:00 shows Moderate tubular dilatation and degeneration along with tubular inflammation noticed. However, the biopsy at 8:00 (images above) shows Multi focal tubular regeneration noticed in primary and secondary tubules in cortex region of kidney. The endoscopic curetings contain a scant amount of Multi focal regenerated tubules appeared in cortex region of kidney.

BIBLIOGRAPHY

1. Bank, N., and H. S. Aynedjian: A micropuncture study of the renal concentration defect of potassium depletion. *Amer. J. Physiol.*, 1964; 206: 1347.
2. Vogel HG. Drug discovery and evaluation: Pharmacological assays 2nd edition.
3. *Journal of functional foods* Volume 21, march 2016 pages 272-282.
4. K.D.Tripathi essential of medical pharmacology basis of Therapeutics 12th edition.
5. Bechwood, E. C., W. O. Berndt and G. H. Mudge: Stop-flow analysis of tubular transport of uric acid in rabbits. *Am. J. Physiol.*, 1964; 207: 1265–1272.