

## RESEARCH ARTICLE

# Diuretic Activity of Hydroalcoholic Extract of *Peristrophe bicalyculata* (R.) Nees. Leaves in Saline Loaded Rats

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Received: 10<sup>th</sup> July, 2023; Revised: 13<sup>th</sup> September, 2023; Accepted: 17<sup>th</sup> October, 2023; Available Online: 25<sup>th</sup> December, 2023

## ABSTRACT

*Peristrophe bicalyculata* (R.) Nees. (PB) is one of the most widely medicinal plants used in ancient folklore to treat a number of diseases. In the present investigation, the diuretic activity of hydroalcoholic extract of leaves of selected plant was evaluated in saline-loaded rats. Rats weighing in between 180 to 200 gm of either sex were taken for the present study and concentration of urinary  $\text{Na}^+\text{K}^+$  and  $\text{Cl}^-$  was determined to access the memorandum of association (MOA). The hydroalcoholic extract of PB leaves at the test dose of 250 mg/kg bw showed significant diuresis in 3 hours while at the test dose of 500 mg/kg bw produced substantial diuresis at the end of 4 hours.

**Keywords:** *Peristrophe bicalyculata*, Diuresis, Leaves, Rat, Extract.

International Journal of Pharmaceutical Quality Assurance (2023); DOI: 10.25258/ijpqa.14.4.35

**How to cite this article:** Dwivedi S, Chhajed M, Chabra G, Jadhav SA, Goyanar G, Choudhary NK. Diuretic Activity of Hydroalcoholic Extract of *Peristrophe bicalyculata* (R.) Nees. Leaves in Saline Loaded Rats. International Journal of Pharmaceutical Quality Assurance. 2023;14(4):1048-1049.

**Source of support:** Nil.

**Conflict of interest:** None

## INTRODUCTION

From ancient cultures, herbs have been used to treat several human disorders, even in developing countries; a majority of the population depends on medicinal plants for the treatment of various human ailments.<sup>1</sup> Diuresis is one of the most important fields where there is a tremendous possibility to use MP's and their products so as to get good effects of drug and patient will feel comfortable.<sup>2</sup>

The plant *Peristrophe bicalyculata* (R.) Nees. (PB) family Acanthaceae is a short sub-shrub having a height of 4 to 6 feet. The various part of the plant is used medicinally. The plant is widely used as an antioxidant, anti-cancer, anti-inflammatory, etc. Literature has reported the diuresis action of this plant,<sup>3</sup> therefore an attempt was made to screen the anti-diuretic activity of the plant.

## MATERIAL AND METHODS

### Plant Material

The leaves of *P. bicalyculata* (R.) Nees. Was collected from the Malwa region and was made authenticated by Botanist, Voucher No. J./Bot./PBL-038.

### Animal

Rats of either sex weighing 180 to 200 gm were selected for the present study. The protocols were approved by IAEC.

### Plant Extraction

In 250 gm of dried powdered coarsely plant material was subject to extraction in Soxhlet using ethanol and water (90:10), after extraction extract was dried. HAEPBL is a hydroalcoholic extract on leaves extract of *P. bicalyculata* (R.).<sup>4</sup>

### Animal Group and Dosing

Rats were divided in different groups. Oral treatment vehicle 2 mL/1-mL was given as negative control, and standard drug furosemide at the dose of 10 mg/kg was taken in reconstitution 2 mL/100 gm distilled water. The other two groups received plant extract at the test dose of 250 and 500 mg/kg bw. (The dose was received from previous findings)

### Diuretic activity

The activity was performed using animal fasting overnight and the treatment with NaCl i.e., normal saline, oral dose of 15 mL/kg for uniformity in water and salt load. The groups

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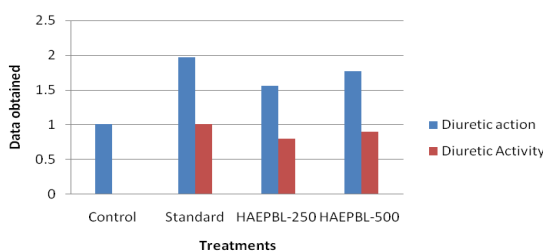
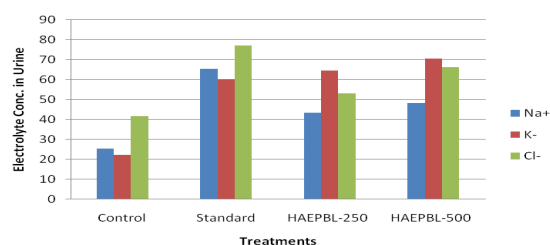
**Table 1:** Effects of hydroalcoholic extract on leaves extract of *P. bicalyculata* (R.) Nees. on urine volume

Group	Volume (mL) after 5 hour	%Urine Excretion	Diuretic action	Diuretic Activity
Control	2.87 ± 0.16	51.39	1	-
Standard-10 mg/kgbw	6.93 ± 0.18	101.36	1.97	1
HAEPBL-250 mg/kgbw	4.76 ± 0.28	80.27	1.56	0.79
HAEPBL-500 mg/kgbw	5.14 ± 0.28	91.28	1.77	0.89

**Table 2:** Effect of hydroalcoholic extract on leaves extract of *P. bicalyculata* (R.) Nees. on urinary electrolyte

Group	Electrolyte Conc. Urinary (mmol/L)		
	Na <sup>+</sup>	K <sup>-</sup>	Cl <sup>-</sup>
Control	25.32 ± 1.12	22.18 ± 2.42	41.82 ± 4.14
Standard-10 mg/kgbw	65.32 ± 4.14***	60.14 ± 3.08***	77.28 ± 4.48***
HAEPBL-250 mg/kgbw	43.29 ± 3.17***	64.46 ± 3.19***	53.28 ± 2.25***
HAEPBL-500 mg/kgbw	48.23 ± 87***	70.46 ± 2.71***	66.24 ± 4.15***

Note: Reading are expressed as X ± SEM from data six and found significant \*\*\*p < 0.001

**Graph 1:** Diuretic action of leaves extract of PB**Graph 2:** Urinary Electrolyte Concentration in leaves extract of *P. bicalyculata* (R.) Nees. on urinary electrolyte

were given with standard drug and another test dose. Urine was collected and further pH and electrolyte analysis was estimated. Statistically, the results were compared using ANOVA and expressed in mean ± SEM.<sup>5-7</sup>

## RESULTS AND DISCUSSION

The diuretic activity of hydroalcoholic extract on leaves extract of *P. bicalyculata* (R.) was screened on saline-loaded rats. From the results obtained it was found that the diuretic action of HAEPBL having dose 500 mg/kgbw is 1.77 which is more than that of HAEPBL having 250 mg/kgbw (1.56). %Urine excretion is more in HAEPBL 500 mg/kg bw and was found to be 91.28. The diuretic activity of HAEPBL -250 mg/kg bw was found to be 0.79 and HAEPBL-500 mg/kg bw was found to be 0.89 (Table 1 and Graph 1). The results for urinary electrolytes was presented in Table 2 and Graph 2.

## CONCLUSION

From the results obtained, it was revealed that the hydroalcoholic extract on leaves extract of *P. bicalyculata* (R.) possess diuretic activity at both dose i.e., 250 and 500 mg/kg bw. At higher doses the results were more better than lower doses. The results of urinary electrolyte concentration suggest that the extract has several MOA and the study will provide the traditional and folklore claims of the plant as a diuretic agent.

## ACKNOWLEDGEMENT

The author (s) are thankful to Dr. S.N. Dwivedi, Retd. Prof. and HOD, APS University, Rewa, (M.P.) for the identification of Plant material and are also thankful to the Management for conducting the research work.

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