

EVALUATION OF ANTIULCER ACTIVITY OF FRESH JUICE OF THE LEAVES OF *PEDALIUM MUREX*

Vaya Rajkumar^{*1}, Modi Harshil and Vaya Rajesh

Department of Pharmacology, Pacific college of Pharmacy, Pacific University, Udaipur
(Rajasthan).

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***Correspondence for
Author**

Vaya Rajkumar

Department of
Pharmacology, Pacific
college of Pharmacy,
Pacific University,
Udaipur (Rajasthan)

ABSTRACT

Peptic ulcer is manifested largely due to an alteration in lifestyle and diet. Gastric ulcer is one of the most serious diseases in the world. Although there are many drugs used for the treatment of gastric ulcer, most of these produce several adverse reactions. The objective of this study was to investigate *Pedaliium murex* (Pedaliaceae) for the antiulcer activity. The study has been done to evaluate the antiulcer effect of fresh juice of the leaves of *Pedaliium murex* on ethanol induced time and dose dependent ulcers. The results obtained from the present study have been shown that fresh juice of the leaves of *Pedaliium murex* possesses antiulcer effect on ethanol induced ulcers. In ethanol and stress induced model, there is decrease in ulcer index, total acidity, total volume of gastric secretion, total protein and

increase in glutathione content and pH of gastric secretion when compared with control. In the present study Famotidine has been used as a standard. Therefore the ethanolic extract of leaves of *Pedaliium murex* could be regarded as a favorable antiulcerogen.

KEYWORDS: *Pedaliium murex*; Antiulcer activity; Peptic ulcer.

INTRODUCTION

Ulcers are an open sore of the skin or mucus membrane characterized by sloughing of inflamed dead tissue.^[1] Ulcers are lesions on the surface of the skin or a mucous membrane characterized by a superficial loss of tissue. Ulcers are most common on the skin of the lower extremities and in the gastrointestinal tract, although they may be encountered at almost any site. Ulcers on the digestive tract membranes are called peptic ulcers (or stomach ulcers or duodenal ulcers).^[2]

For a long period of time, plants have been a valuable source of natural products for maintaining human health, especially in the last decade, with more intensive studies devoted to natural therapies. The use of plant compounds for pharmaceutical purposes has gradually increased in India.^[3]

Plant has a great potential for new drugs benefit for human. Plant used in traditional medicine contains a vast array of substances that can be used to treat chronic and even infectious diseases. The demand for more and more drugs from plant sources is continuously increasing. According to World Health Organization, more than 80% of world's populations depend on traditional medicine for their primary health care needs.^[4] *Pedaliium murex* L. (Pedaliaceae) is a diffuse, found near the sea coast of south India. It is also distributed in tropical africa, ceylon, India and Mexico.^[5] It is a Succulent herb about 15 to 40 cm in height.^[6] *Pedaliium murex* is commonly called Gokhru in India.^[7]

Pedaliium murex is demulcent, diuretic and also found to be useful for the treatment of disorders of urinary systems such as gonorrhea, dysuria, and incontinence of urine etc.^[8,9]

Leaves contain hexacosanol, lupeol, α -spinasterol, octacosalonic acid, α -spinasterol- β -D-glucoside, α -spinasterone, and lupeone, hentriacontane and octacosanol. Leaves are used for diarrhoea, alcoholic extract of leaves inhibits myobacterium tuberculosis and alkaloid fraction of the leaves is effective on the CNS and PNS and also used for peptic ulcers, demulcent & aphrosidiac.^[10]

The plant is sweet, cooling, mucilagenous duretic and inflammatory and used to treat digestive, carminative, tonic and puerperal, spermatorrhoea, spamodic affection, amenorrhoea, dysmenorrhoea, inflammation, vitiated condition of pitta and general debility.^[11]

Research on medicinal plants has been increased and for their antiulcer activities screnned in number of studies. Hence, an attempt was made to evaluate the phytochemical properties and antiulcer activities of *Pedaliium murex*.

MATERIALS AND METHODS

Material

Animals

Albino rats weighing 150-250 gm of either sex were used in this study.

Source

Rats used for the study.

The leaves of *Pedaliium murex* Linn were collected & after that the leaves were dried in the shaded area.

Standard Drug

Famotidine was used as a standard drug. It was procured from the market.

Extraction of Plant

The dried leaves of *Pedaliium murex* Linn were ground to fine using Hammer mill.

Preparation of juice

Fresh leaves of *Pedaliium murex* were collected and juice of leaves was made. Then, the required quantity of juice was suspended in water and used for studying antiulcer activity.

Dose Fixation

The toxicity studies were done by up and down or Staircase method.

Method

Ulceration was induced in 36 hours fasted rats by the administration of 80% ethanol (1ml/kg) orally. The reference standard (famotidine, 3mg/kg) and juice of the leaves of *Pedaliium murex* (FJLPM) in doses of 0.5, 1.0, 2.0ml/100gm was given to different groups, one hour before the administration of ethanol. A marked gastric mucosal lesion was observed with ethanol.

Various Evaluation parameters were evaluated:

1. Ulcer Index
2. Total Acidity
3. Acid Volume
4. pH
5. Total Protein and
6. Glutathione.

Table1: Dose dependent studies of the fresh juice of leaves of *Pedaliium murex* (FJLPM) using rats in ethanol induced ulcer model.

S.No	Treatment	No of Animals	Dose	Ulcer Index	Total Acidity (mEq/L)	Acid Volume (ml)	pH	Glutathione (mcg/gm)	Total Protein gm/dL
1	Control (water)	6	---	11.16±0.30	114.1±1.13	8.61±0.21	2.4±0.10	0.89±0.012	0.806±0.02
2	Famotidine	6	0.3ml/100gm	4.33±0.42**	59.6±0.84**	4.75±0.33**	5.0±0.16**	1.45±0.19*	0.699±0.03*
3	FJLPM	6	0.5ml/100gm	9.00±0.28	90.5±0.22*	6.75±0.11*	3.38±3.07	0.86±0.065	0.714±0.09
4	FJLPM	6	1.0ml/100gm	6.16±0.21*	77.0±0.516*	5.73±0.09*	3.81±4.77**	0.95±0.094	0.657±0.05*
5	FJLPM	6	2.0ml/100gm	1.65±0.11**	67.3±0.21**	5.10±0.04**	4.13±3.33**	1.01±0.024*	0.571±0.02*

Where:FJLPM - fresh juice of leaves of *Pedaliium murex*

**P<0.001, *P<0.05, compared with control.

Table 2: Time dependent studies of the fresh juice of leaves of *Pedaliium murex* (FJLPM) using rats in ethanol induced ulcer model.

S.No	Treatment	No of Animals	Dose	Treatment Duration (days)	Ulcer Index	Total Acidity (mEq/L)	Acid Volume (ml)	pH	Glutathione (mcg/gm)	Total Protein gm/dL
1	Control	6	---	15	11.6±0.42	108.8±3.13	8.25±0.42	2.4±0.06	0.89±0.01**	0.806±0.08
2	Famotidine	6	0.3ml/100gm	15	4.1±0.48	56.4±0.95**	4.50±0.22**	5.0±0.02**	1.65±0.66	0.610±0.06**
3	FJLPM	6	1.0ml/100gm	15	1.25±0.11	64±0.365*	4.23±0.08	4.31±0.05#	1.03±0.03*	0.550±0.02
4	Control	6	---	30	11.6±0.30	106±0.44**	7.85±0.06	2.4±0.09	0.89±0.01	0.806±0.14
5	Famotidine	6	0.3ml/100gm	30	0.00*	54.5±0.22**	3.95±0.02	5.0±0.06**	1.75±0.02**	0.563±0.27*
6	FJLPM	6	1.0ml/100gm	30	0.00*	55.5±0.22	4.05±0.02*	5.2±0.02**	1.08±0.09	0.505±0.002

Where:FJLPM - fresh juice of leaves of *Pedaliium murex*

**P<0.001, *P<0.05, compared with control.

Table 3: Time dependent studies of the fresh juice of leaves of *Pedaliu murex* (FJLPM) using rats in ethanol induced ulcer model.

S.No	Treatment	No of animals	Dose	Treatment Duration(days)	Glutathione (mcg/gm)	Total Protein gm/dL
1	Control	6	-	15	0.89±0.01**	0.806±0.08
2	Famotidine	6	0.3ml/100gm	15	1.65±0.66	0.610±0.06**
3	FJLPM	6	1.0ml/100gm	15	1.03±0.03*	0.550±0.02
4	Control	6	-	30	0.89±0.01	0.806±0.14
5	Famotidine	6	0.3ml/100gm	30	1.75±0.02**	0.563±0.27*
6	FJLPM	6	1.0ml/100gm	30	1.08±0.09	0.505±0.002

Where:

FJLPM - fresh juice of leaves of *Pedaliu murex*

**P<0.001, *P<0.05, compared with control.

RESULT AND DISCUSSION

To evaluate the antiulcer activity, ethanol induced at various doses and time intervals were selected.

ETHANOL INDUCED ULCER

Dose dependent studies

FJLPM had shown significant decrease in ulcer index with increase in the dose. The dose such as 2.0ml/100gm body weight observed a significant decrease in ulcer index. FJLPM showed significant decrease (P<0.001) in acid volume, total acidity and total protein with increase in the dose, at 2.0ml/100gm body weight. FJLPM showed increase in pH and glutathione content with increase in the dose, at 2.0ml/100gm body weight. As shown in table no. 1.

Time dependent studies

At dose of 1.0ml/100gm body weight it had shown time dependent decrease in ulcer index. FJLPM for the duration of 30 days shows significant decrease (p<0.05) in ulcer index. FJLPM showed significant decrease (p<0.05) in gastric acid volume and total acidity with increase in the time interval, at 1.0ml/100gm body weight for 15 and 30 days compared with control. There was statistically significant decline in the total protein content compare to control group. FJLPM showed significant increase (p<0.05) in glutathione content with increase in the time interval. As shown in table no. 2 and 3.

A perceptible elevation in ulcer index, total acidity, acid volume, total protein and diminution of glutathione was observed. Pretreatment with juice of the leaves of *Pedaliium murex* (FJLPM) particularly at a dose of 2.0ml/100gm in a single schedule and 1.0ml/100gm for 15 and 30 days treatment annihilated these alterations and elevated the level of glutathione.

CONCLUSION

Pretreatment with FJLPM particularly at a dose of 2.0ml/100gm in a single schedule and 1.0ml/100gm for 15 and 30 days treatment decreases ulcer index, total acidity, total volume of acid secretion and total protein and increase in pH and glutathione content when compared with control.

All these observation imply that the Fresh Juice of Leaves of *Pedaliium murex* could be regarded as a favorable antiulcerogen which could be attributed to its content of flavonoids and mucilage.

That is may also used in treatment of ulcer in humans after some more evaluation on it.

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