ISSN: 2456-2572

APJPP 2016; Vol.1 (02): pp. 75-78 **Original Research Article**

ASIAN PACIFIC JOURNAL OF PHARMACY & PHYTOCHEMISTRY

Available online at http://apjpp.com

Received: 11-08-2016
Revised: 06-09-2016
Accepted: 15-09-2016

Lincy Joseph
Pushpagiri College of Pharmacy, Tiruvalla, kerala

Mathew George
Pushpagiri College of Pharmacy, Tiruvalla, kerala

Shreyansh Sharma
Pushpagiri College of Pharmacy, Tiruvalla, kerala

Mincy Mathew
Pushpagiri College of Pharmacy, Tiruvalla, kerala

Corresponding Author
Mathew George
E: mathewlincg@yahoo.com

PHYTOCHEMICAL SCREENING AND ANTI INFLAMMATORY ACTIVITY OF ALCOHOLIC EXTRACT OF *FAGONIA INDICA* LEAVES

Lincy Joseph, Mathew George, Shreyansh Sharma and Mincy Mathew

ABSTRACT

The proposed work aims to perform the preliminary phytochemical screening and evaluate the anti-inflammatoryactivity potential of the alcoholic leaves extract of the plant *Fagoniaindica* .Phytochemical screening reveals the presence of amino acids,terpenoids, saponins, proteins and glycosides in leaves extract. Forthe assessment of the anti-inflammatory activity of the extracts at the dose of 200 and 400 mg/ kg, we used carrageenan induced paw edema model in rats. The standard drug diclofenac sodium at the dose of 20 mg/ kg were administered. The extract have shown significant activity ($p<0.05$) at 0h,1h,2h,3h,4h and 5h when compared to the control group.

Key Words: *Fagoniaindica,* anti-inflammatory activity, carrageenan.

INTRODUCTION

The plant *Fagoniaindica* belongs to the family *zygophyllacea*. Many plants belonging to the family *zygophyllacea* have been used in the indigenous system of medicine for the treatment of various diseases.According to literature survey the plant *fagoniaindica* is found to have anti-cancer, anti-fungal, and anti-inflammatory activities[1].The proposed pharmacological investigation has not been reported for the leaves of selected plant. An attempt has been made in the present study to evaluate the anti-inflammatory and analgesic activity on the leaves of *Fagoniaindica*.

MATERIALS AND METHODS

The plant *Fagoniaindica* was collected from Central Arid Research Institute (CAZRI) and nearby areas of Jodhpur Rajasthan. The identity of the plant *Fagoniaindica* was done with the help of the literature available in the Department of Botany, Jai NarainVyas University, and Jodhpur. The leaves were carefully plucked and processed for further studies, dried in shade. It was crushed to obtain a coarse powder. Extraction was done by simple maceration [2].The plant material was dried and a coarse powder was prepared. 20 g of powder was soaked in 200 ml ethanol and kept for seven days with occasional shaking. After seven days it was filtered and the solvent was evaporated to get the concentrated extract.

Phytochemical analysis

The ethanolic extract obtained by maceration was subjected to tests for various phytochemical constitutuents using standard procedure [3].

PHARMACOLOGICAL SCREENING OF EXTRACTS

Animals

Healthy albino Wistar rats of either sex and approximately 12 to13 weeks of age weighing 150-200 g were included in the study. The animals were acclimatized by keeping in animal house facility for a week. They were housed in polypropylene (32x24x16 cm) cages containing bedding material as husk and maintained under controlled conditions of temperature (23±2° C), humidity (55±5%) and 12 h light and 12 h dark cycles. They were fed with commercial pellet rat chow (M/S Gold Mohur foods and feds, Mumbai.) with water *ad libitum*. The animals were maintained in accordance with the CPCSEA guidelines. The research protocol was approved by Institutional Animal Ethical Committee (010/2009/CPCSEA/JNU)

Acute toxicity studies

Twenty albino rats were divided into four groups of five rats each and were given graded doses (200,400,800 and 2000mg/kg body weight)of the extract using an incubation cannula. All the animals were then observed over a period of 10 days for deaths and signs of acute toxicity.

Anti-inflammatory activity

For the assessment of the anti-inflammatory activity of the extracts at dose of 200 and 400 mg/ kg, we used carrageenan induced paw edema model on rats. The standard drug Diclofenac sodium (Voveran, Novartis, India) in dose of 5 and 10 mg/ kg were administered in the form of suspension in 2% gum acacia as vehicle. The extracts were also administered in the form of suspension in the same vehicle. The animals were divided into 4 groups each comprises of six animals. All the groups received intraperitoneal injection in group I, Control animals received 2% gum acacia at the dose of 10 ml/kg, in group II received standard Diclofenac sodium at the dose 20 mg/kg respectively, and the remaining 2 groups received ethanolextract, at the dose of 200 and 400 mg/kg respectively. Initially the left paw of each rat was marked just beyond tibio-tarsal junction and volume of the paw up to the mark was measured by using Plethysmometer. After thirty minutes of drug administration in the groups, 0.1 ml of 1% carrageenan solution was injected in the plantar region of the left hind paw of the rats. Left paw volumes were measured ater1, 2, 3 and 5 h. after carrageenan injection [4]. The edema was expressed as an increase in the volume of the paw and the percentage of inhibition for each group was obtained as follows-

$$\% \text{ of inhibition} = \frac{(Vt - V0)\ \text{control} - (Vt - V0)\ \text{treated}}{(Vt - V0)\ \text{control}} \times 100\ \%$$

The determination of swelling index (the percentage of swelling after administration of drugs) helps in ascertaining anti-inflammatory activity of a drug. The

swelling indexes were calculated at 1, 2, 3 and 5th h of drug administration.

RESULT AND DISCUSSION

Phytochemical screening

Table No.1. The results of qualitative chemical tests for ethanolic extracs of leaves of *Fagonia indica*

Sl. No:-	Qualitative Analysis	Ethanolic extract
1.	Fats	(-)
2.	Tannins	(-)
3.	Alkaloids	(-)
4.	Amino acids	(+)
5.	Flavanoids	(-)
6.	Terpenoids	(+)
7.	Steroids	(-)
8.	Saponins	(+)
9.	Glycosides	(+)
10.	Gums	(-)
11.	Proteins	(+)

(+) – Presence of constituents (-) - Absence of constituents

Phytochemical screening revealed that ethanolic extract of the fagonia leaves contain Glycosides, Terpenoids, Saponins, Amino acids and proteins.

Pharmacological screening

Acute toxicity studies

There was neither change in behavioral pattern nor any sign of toxicity during the observations up to 24 h for mortality. The extracts were safe up to a maximum dose of 2000 mg/kg b.w. The biological evaluation was carried out at doses of 100 and 200 mg/kg b.w.

Anti inflammatory activity

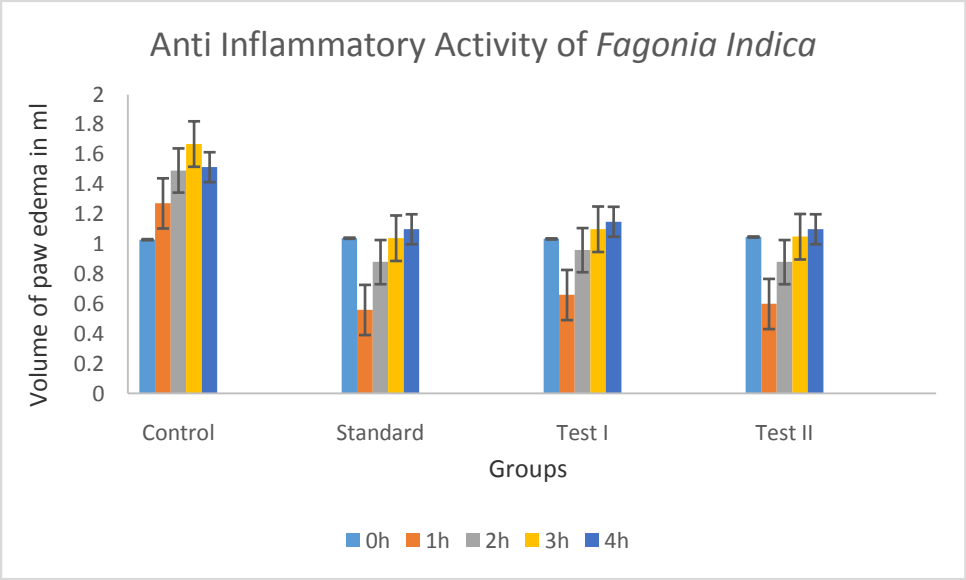
Anti-inflammatory activity of the extracts was performed by carrageenan induced rat paw edema method .The results are shown in the following table

Table No.2 Anti-inflammatory effect of ethanolic extracts of leaves of *fagoniaindica* by carrageenan induced rat paw edema method

Treatment	Dose mg/kg	Paw volume after carrageenan (ml)					
		0h	1h	2h	3h	4h	5h
Control	10 ml/kg	1.03± 0.02	1.273±0.02	1.493±0.03	1.673±0.01	1.515±0.01	1.478±0.08
Standard	20mg/kg	1.04±0.02	0.56± 0.01	0.88±0.06	1.04±0.01	1.1±0.11	1.18±0.01
Test I	200	1.035±0.01	0.66±0.01	0.96±0.02	1.1±0.02	1.15±0.01	1.2±0.01
Test II	400	1.048±0.01	0.60±0.01	0.88±0.02	1.05±0.01	1.1±0.01	1.25±0.06

Mean ± SEM (n=6) ($p<0.05$)

Graph No.1. Anti Inflammatory activity of *Fagoniaindica*



DISCUSSION

The leaves of *Fagoniaindica* were extracted with ethanol by maceration. The extract was syrupy and dark greenish in colour. The preliminary phytochemical screening revealed the presence of glycosides, terpenoids, amino acids, proteins and saponins in the extract. The extract have shown significant activity ($p<0.05$) at 0h,1h,2h,3h,4h and 5h when compared to the control group. While the standard drug shown significant activity ($p<0.01$) at 0h,1h,2h,3h,4h and 5h. The ethanolic extract of leaves of *Fagoniaindica* possess significant anti-inflammatory activity when compared to the standard drug. Further studies are recommended to identify the active constituents present in the extract.

REFERENCES

1. Attar-Ur-Rahman and Akbar Ali Ansari, Ursolic acid and Pinatol from *Fagoniaindica*, J. Natural Products. 101(47).

2.Kamel,H. Shaker.M, Hani. TerpenoidSaponins from *Fagoniaindica*, Phytochemistry, 51(8), 1049-1053 (1999)

3. Jyothi G,William M. Carey, Ravi Kumar B Antinoceecptive and Anti-inflammatory activity of Methanolic extract of leaves of *Shorea Robusta*, Pharmacologyonline, 1: 1027-1034 (2009)

4. Goyal R.K. Practicals in Pharmacology 4th edn, B.S.Shah Prakashan, Ahemadabad,131-135,2004.