Available online on www.ijppr.com
International Journal of Pharmacognosy and Phytochemical Research 2011-2012; 3(4);93-94

ISSN: 0975-4873

Research Article

Anti - inflammatory activity of *Tephrosia purpurea*. Root

R. Praveena*, S. Amarnath, M. Jegadeesan

* Dept. of Botany, Srimad Andavan Arts and Science College, Thiruvanaikoil, Tiruchirappalli – 620 005.
Department of Environmental and Herbal Science, Faculty of Science,
Tamil University, Thanjavur, India -613010

ABSTRACT

Tephrosia purpurea L. belongs to the Family Fabaceae. It is one of the most important plants used in the indigenous system of medicine. To study the anti-inflammatory activity of 50 per cent alcoholic root extract of *T. purpurea* using Carrageenan induced model. Anti-inflammatory activity of root of *T. purpurea* was studied, in which inflammation was induced by injecting 0.1ml of 1 per cent Carrageenan in to the sub plantar side of the left hind paw. Test drugs were administered in a dose of 5, 10 and 20 mg/kg B.W. one hour before commencing the experiment. The anti-inflammatory activity was assessed by determining and comparing the paw volume (ml) in the test drug group with that of the vehicle control group. Dichlofenacsodium 5 mg/kg B.W. was used as a reference drug. Inflammation in the root of *T. purpurea* treated animals was found to be significantly less compared to vehicles control animals. Dichlofenacsodium (5 mg/kg B.W.) produce significant reduction in inflammation when compared to control group. Root extract of *T. purpurea* produced significant anti-inflammatory activity. Our results suggest that all the root extract of *T. purpurea* possess significant anti-inflammatory activity. Among the three doses of *T. purpurea* 20 mg/kg B.W. showed maximum activity.

Keywords: *Tephrosia purpurea*, Inflammation, Carrageenan

INTRODUCTION

Tephrosia purpurea L. belongs to family Fabaceae, commonly known as Kattu Kolingi in Tamil and Sharapunka in Sanskrit. It is indigenous to India and is also found in Ceylon, Mauritius, Tropical Africa and Subtropical regions. It is one of the most important plants used in the traditional system of medicine. Roots and seeds are insecticidal and pisicicidal. Decoction of roots given in dyspepsia, diarrhoea, rheumatism, asthma and urinary disorders; roots given with black pepper in colic. A liniment prepared from the roots is used in elephantiasis. Pulverized roots smooked for relief from asthma and cough, decoction of pods used as a Vermifuge and to stop vomiting[1]. Root powder is smoked for respiratory disease and boiled in with is applied on leprosy and wounds[2]. Though many pharmacological works has been undertaken in *T. purpurea*, little Pharmacognostical work has been done on *T. purpurea* root. With this background, the present work was undertaken and was subjected to anti-inflammatory study using Carrageenan induced model.

MATERIALS AND METHODS

Plant material**:** The plant material used in this study was root of *T. purpurea;* was collected in Thanjavur region, Tamil Nadu on May 2008. The plant materials was identified and authenticated taxonomically by Prof. M. Jegadeesan, Head, Dept. of Environmental and Herbal Science, Faculty of Science, Tamil University, Thanjavur. A voucher specimen of each of the collected samples was deposited in Tamil University Herbarium for further reference. (TUH 277-278)

Preparation of powder[3]: The root was separated from the selected species of *Tephrosia* and dried under shade. These dried materials were mechanically powered and sheaved using 80 meshes and stored in airtight container.

Preparation of Extract:50 per cent alcoholic (5.7%) extract was prepared according to the method of Indian Pharmacopoeia[4]. Preliminary phytochemical screening of root extract gave positive result for alkaloids, carbohydrates, flavonoids, tannin&phenols, phytosterols and saponins. For the pharmacological test the extract was suspended in double distilled water containing 1per cent Carboxy Methyl Cellulose.

Animals: Swiss Albino Wistar male rats (150 to 200 g) were procured from Venkateswara Animal House, Bangalore. They were kept in appropriate suitable condition (27 ± 2°C) in a ventilated room. Permission for animal experiments was obtained from Institutional Animal Ethical Committee.

Anti-inflammatory activity: The anti-inflammatory effect was evaluated by different doses of 50 per cent alcoholic extract of root of *T. purpurea* using Carrageenan an induced paw edema method[5].

Statistical analysis: The present study was subjected to student's't' test are computed for all the biochemical estimation, to find out statistical significance 1 per cent and 5 percent probability levels.

RESULTS

Author for correspondence: E-mail: rpraveenaa@gmail.com.

Table 1: Effect of 50 per cent alcoholic root extracts of *T. purpurea* on Carrageenan induced oedema in rats

Treatment	Dose (mg/kg)	Decrease of paw volume after 3h(ml)	%inhibition
Control (1%CMC)	-	1.913 ± 0.013	0
Dichlofenacsodium	5	0.516 ± 0.007	73.0***
T. purpurea	5	0.944 ± 0.140	56.1***
T. purpurea	10	0.795 ± 0.051	58.6***
T. purpurea	20	0.663 ± 0.038	65.4***

Values are mean ± SEM for Six rats.
P < 0.001 Compared to control group

Result revealed that positive group indicated that Diclofenacsodium (5 mg/Kg B.W.) reduced the paw volume to the extent of 73.0 per cent at 3rd hour of Carrageenan injection and the test drugs showed dose dependent activity. The dose of 20 mg/Kg B.W. exerted maximum percentage of (65.4%) inhibition in edema volume.

DISCUSSION

The ethnobotanical utility of the roots of other species (*T. falciformis*) for various ailments related to inflammatory disorders. The present study was undertaken on root of *T. purpurea*. Anti-inflammatory activity was examined by Carrageenan model. The Carrageenan paw inflammation has been accepted as a useful diagnostic tool for investigation of systemic anti-inflammatory activity for any drugs. 50 per cent alcoholic root extract of *T. purpurea* showed dose dependent and significant inhibitory activity in Carrageenan induced paw inflammation at 3rd hour.

The mechanism of action of Carrageenan induced paw edema is described as biphasic. The first phase is due to the release of histamine, 5 –HT and kinins in the first hour injection of Carrageenan[6,7,8], the second phase is related to the release of prostaglandins like substance in 3rd hour. Since, root extract of *T. purpurea* reduced inflammation at 3rd hour, the biological compounds, present in the fruit pulps acted against prostaglandins like substances.

CONCLUSION

From the result, 20 mg/Kg B.W. showed maximum percentage of inhibition in edema volume than the remaining dose levels in Carrageenan induced model, which might due to the higher concentration of active compounds involved in inhibiting prostaglandin synthesis. Further works, are needed to confirm the maximum activity of root of *T. purpurea*. Moreover, some of the active compounds such as flavonoids, steroid compound and anti-oxidants like oleic acid and palmitic acid took responsible for this pharmacological action and also need to be identified.

REFERENCES

1. KR Kritikar, and BD Basu. Indian Medicinal Plants. Lailt Mohan Basu, Allahabad, India. 1980.
2. JK Maheshwari. Ethnobotany and Medicinal Plants of India. Scientific Publisher, Jodhpur, India. 2000.
3. JB Harborne. Phytochemical Methods, 1st edition, Chapman and Hall, London. 1973.
4. Anonymous. Pharmacopoeia of India; Ministry of Health, Govt. of India Publication, New Delhi. 1996.
5. CA Winter, EA Risely, GW Nuss. Carrageenan induced oedema in hind-paw of the rats – an assay for anti-inflammatory drugs. Proc. Soc. Exp. Biol. Med., 1962; 3: 544-547.
6. J.Ramamoorthy, Vanathy, R.Meera, S.Venkataraman, P. Devi , N. Chidambaranathan, Phytochemical Investigation and Anti-inflammatory Activity of Salacia reticulate, International Journal of Toxicological and Pharmacological Research, 2010, 2(3); 81-84
7. Jagtap V. A., Md Rageeb Md Usman , Salunkhe P.S., Gagrani M.B., Anti–inflammatory activity of calotropis gigantea linn. Leaves extract on in-vitro models., International Journal of Current Pharmaceutical Review and Research, 2010, 1(2); 1-5
8. PM Brooks, RO Day. Nonsteroidal anti-inflammatory drugs difference and similarities. J.N. Eng. Med. 1991; 324: 716 – 725