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Research Article

ANTI-INFLAMMATORY ACTIVITY OF FLOWER EXTRACT OF *BUTEA MONOSPERMA*

Firdaus Rana* and Mazumder Avijit

Noida Institute of Engineering and Technology, 19, Knowledge Park-2, Institutional Area, Phase-II, Greater Noida, Uttar Pradesh, India.

ABSTRACT

Buteamonosperma (Family :Fabaceae). This is a moderate sized deciduous tree which is widely distributed throughout India, Burma and Ceylon, popularly known as 'dhak' or 'palas', commonly known as *'Flame of forest'*. The family Fabaceae compromises of 630 genera and 18,000 species . It finds use both medicinally and commercially with each part of the plant having utility. This plant species has been found to display a wide variety of biological activities. The plant is traditionally reported to possess astringent, bitter, alterative, aphrodiasiac, anthelmintic, antibacterial and anti-asthmatic properties . Bark yield red juice known as 'Butea gum'or 'Bengalkino'. Its reported pharmacological properties include anthelmintic, anticonceptive, anticonvulsive, antidiabetic, antidiarrhoeal, antiestrogenic and antifertility,antimicrobial, antifungal, antibacterial, antistress, chemopreventive, haemaggultinating, hepatoprotective, radical scavenging, thyroid inhibitory, antiperoxidative and hypoglycemic effects and wound healing activities. It is powerful astringent and is given in many forms of chronic diarrhoea. Seeds have anthelmintic property especially for roundworms and tapeworms. Flowers yields a brilliant yellow coloring matter due to presence of chalcones. Such herbal medicines may provide potential effect as of compared to the conventional available synthetic drugs, with less or no side effects.

Keywords: *Buteamonosperma*, Antiinflammatory, Butin, Palash, dhak.

INTRODUCTION

Buteamonosperma is commonly known as Flame of forest, belonging to the family Fabaceae. It is locally called as palas, palash, mutthuga, bijasneha, dhak, khakara, chichra, Bastard Teak, Bengal Kino, Nourouc and is common throughout India, Burma and Ceylon except in very acrid parts. The pods should be collected and shown before the commencement of rains, root suckers are freely produced and help in vegetative propagation . The genus *Butea*includes *Buteamonosperma*parviflora, *Butea minor* and *Buteasuperba* widely distributed throughout India. The flowers are widely used in treatment of hepatic disorders, viral hepatitis, diarrhea, depurative and tonic . The flowers are also good source of flavonoids. The contents of flowers are Butein, Butrin, Isobutrin, Plastron, coreipsin, and Isocoreipsin.Isolation of medicarpin with antifungal activity from this part of the plant has also been reported. From the flowers of this plant species the flavonoids Butin, Butein, Butrin, Isobutrin, Palasitrin, Coreopsin, Isocoreopsin, Sulphuresin, Monospermoside, Isomonospermoside and 7,3,4-trihydroxyflavone have been isolated. The Euphanetriterpenoid 3a-hydroxyeuph-25-ene and the alcohol 2, 14-dihydroxy-11, 12-dimethyl-8-oxo-octadec-11-enylcyclohexane has been isolated from the stem. The Imide palasimide has been isolated from the pods of this plant species. Studies on anti-oxidant status following ulceration indicate that free radicals seem to be associated with the pylorus ligation and ethanol induced ulceration in rats.[1]

MATERIAL AND METHODS

Plant material

The flowers of *Buteamonosperma*(Lam.) were collected from Canal colony, New. Delhi with the help of local tribal and were identified. Fresh flowers was collected in bulk, washed under running tap water to remove adhering dust, dried under sunlight and pulverized in a mechanical grinder. The powder was passes through sieve no. 40 and used for extraction. [2]

Preparation of methanolic extract

A weighed quantity of dried powdered flowers of plant (70 gm) subjected to hot solvent extraction in a soxhlet apparatus (50 cycles per each batch) using ethanol (95 %), at a temperature range of 550C to 650C. The filtrate was evaporated to dryness at 400C under reduced pressure in a rotary vacuum evaporator. The percentage yield of ethanolic extract was 13.25 % w/w. [3]

ANTI-INFLAMMATORY ACTIVITY

Acute Anti inflammatory model

Results were expressed as percentage of inhibition of edema, calculated by the formula - *Vc – Vt /Vc × 100*

Where, Vt and Vc are the mean paw volume in the treated and controlled groups, respectively.[4]

The acute anti-inflammatory effect of methanolic extract of *Buteamonosperma* is shown in Table 1

Table 1: Effect of MFBM (Methanolic Fraction of *Buteamonosperma*) on Carrageenan induced rat paw

Treatment	Dose	Increase in paw volume (Mean±SEM) (ml) (% Inhibition of paw edema)				
		1hr	2hr	3hr	4hr	6hr
Control (Normal Saline)		0.6 ±0.3651	0.675 ± 0.017	0.715± 0.014	0.73±0.010	0.695±0.016
Standard Indomethacin	10mg/kg	0.42±0.0095** (30%)	0.45±0.018** (33%)	0.498±0.026** (35.66%)	0.43±0.0063** (41.09%)	0.38±0.025** (44.92%)
Extract (MFBM)	400mg/kg	0.578±0.083 (5%)	0.595±0.005* (12.6%)	0.62±0.016* (13.2%)	0.53±0.015** (27.39%)	0.45±0.021** (34.78%)
Extract (MFBM)	600mg/kg	0.51±0.011* (18.38%)	0.53±0.014** (21.48)	0.566±0.29** (28.83%)	0.50±0.010** (31.5%)	0.48±0.014** (39.56%)

Data in mean± SD (n=6)., % inhibition of the Carrageenan induced inflammation (edema) are indicated as (%). Significant difference from control P^{*}<0.05 vs Control, P^{**}<0.01 vs indomethacin, Two-way ANOVA; SEM = Standard error of mean.

Chronic Anti inflammatory model

Chronic inflammation, on the other hand, is a disease. Today modern medicines are starting to admit that chronic inflammation is the main contributing factor to all chronic degenerative diseases, and the root cause of the two greatest killers in America: Cancer and Heart Disease. In deed, chronic inflammation might just be the root cause of all degenerative disease.

Table 2 shows the result of the methanol extract of *Buteamonosperma* as evident by chronic anti-inflammatory model.

Table 2: Effect of MFBM (Methanolic Fraction of *Buteamonosperma*) on Cotton pellets granuloma in rats

Treatment	Dose(mg/kg) p.o for 7 days	Granuloma wt (gm)	Inhibition (%)
Control (Normal Saline)		0.25 ± 0.02	–
Standard (Indomethacin)	10mg/kg	0.10 ± 0.02**	60%
MFBM	400mg/kg	0.16 ± 0.02*	36%
MFBM	600mg/kg	0.14 ± 0.02**	44%

Values are mean ± SEM (n=6)., *P<0.05 and **P<0.01 when compared with control group.

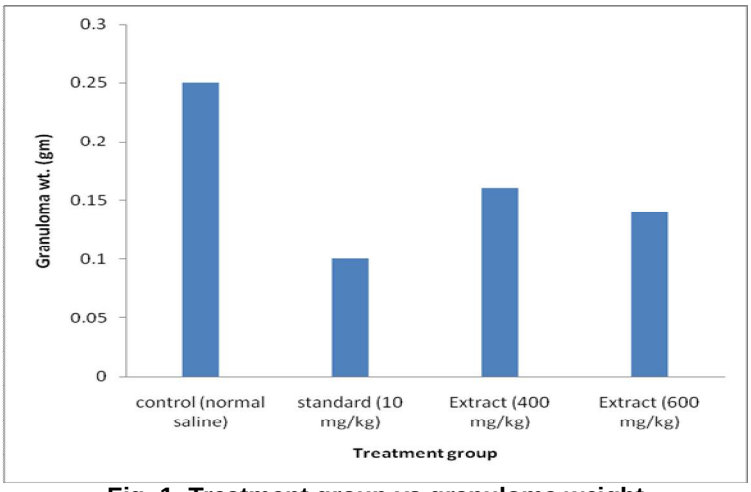

Fig. 1: Treatment group vs granuloma weight

RESULT AND DISCUSSION

Acute Anti inflammatory model

Carrageenan-induced hind paw edema is the standard experimental model of acute inflammation. The time course of edema development in carrageenan-induced paw edema model in rats is generally represented by a biphasic curve. The first phase of inflammation occurs within an hour of carrageenan injection and is partly attributed to trauma of injection and also to histamine, and serotonin components. The second phase is associated with the production of bradykinin, protease, prostaglandin, and lysosome. Prostaglandins (PGs) play a major role in the development of the second phase of inflammatory reaction which is measured at +3 h. The doses 400 mg/kg and 600 mg/kg of alcoholic extract of *Buteamonosperma* produced a significant inhibition of carrageenan induced paw edema at +3h and +6h. Therefore, it can be inferred that the inhibitory effect of alcoholic extracts of *Buteamonosperma*on carrageenan induced inflammation could be due to inhibition of the enzyme cyclooxygenase and subsequent inhibition of prostaglandin synthesis. Significant inhibition of paw edema in the early hours of study by *Buteamonosperma* could be attributed to the inhibition of histamine and /or serotonin. The decrease in paw edema inhibition at +6h may be attributed to the termination of test drug action.

Chronic Anti-inflammatory model

The study of Table 2 reveals that percentage inhibition was shown by 400mg/kg of leaf extract was found to be 36 percentage and percentage inhibition was shown by 600mg/kg of the same extract was found to be 44 percentage. It is clear that the effect varies in a dose dependent way. The standard drug Indomethacin shows 60 percentage inhibition of inflammation and thus it is seen that the effect of the extract at 600mg/kg can be compared with that of the standard drug.

CONCLUSION

Based on the results we can suggested that the antiinflammatory effect of *Buteamonosperma* methanolic extract, is related to the possible presence of alkaloid and tannins in the extract. The present study justifies the folkore claims of its Anti-inflammatory property. It would be interesting to isolate the possible constituents those are responsible for such activity.

REFERENCES

1. Kirtikar KR and Basu BD: Indian medicinal plants, Part-II, International Book Distributors, Deharadhun, Second edition. 1999;785-786.
2. Evans WC. Trease and Evans Pharmacognosy.
3. Evans WC. Trease and Evans Pharmacognosy. W B Saunders Company Ltd, London, 15 th edition: 125.
4. Mukherjee PK. Quality Control of Herbal Drugs. Business Horizons, New Delhi, First edition, 2002;24.
5. Gupta A, Pandey S and Shing J. Anti-inflammatory activity of ethanolic bark extract of Buteamonosperma. Indian Journal of Pharmaceutical and Clinical Research. 2008;I (1):95-97.