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SCREENING OF ANTI-INFLAMMATORY POTENTIAL OF *CISSAMPELOS PAREIRA* LINN LEAVES EXTRACT IN ALBINO RATS

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ABSTRACT

Anti-inflammatory activity of the ethanolic extract of the *Cissampelos pariera* Linn leaves was studied in albino wistar rats using the carrageenan induced rat paw edema model. The ethanolic extract of *Cissampelos pariera* (400 mg/kg p.o.) inhibited carrageenan induced rat paw edema. The extract was also studied for its preliminary phytochemical screening and acute toxicity studies. The result indicated that the extract produced significant ($P < 0.05$) anti-inflammatory activity when compared with the standard drug indomethacin (10 mg/kg p. o.) and untreated control.

INTRODUCTION: *Cissampelos pariera* Linn, belonging to the family Menispermacae, is commonly known as patha (Hindi). It used in the traditional system of medicine in the treatment of various diseases like dysentery, diarrhea and skin disorder. The leaf juice possesses antiseptic, insecticidal and parasiticidal properties, used to check hemorrhage from cuts burns and wounds[1, 2]. It is a climber plant and found almost throughout India like Maharasthra, Tamilnadu, chota Nagpur, Bihar, Aravalli region and Himanchal Pradesh etc [3].

The purpose of the present study was therefore to evaluate the anti-inflammatory potential of *Cissampelos pariera* leaf extract using different acute models of inflammation in rats. The extract was also studied for its acute toxicity effects and preliminary phytochemical screening.

MATERIAL AND METHODS:

Plant Material: The leaves of *Cissampelos pareira* Linn were collected from the National botanical research institute, Lucknow, Uttar Pradesh, India and were authenticated by a taxonomist where a voucher specimen is deposited for further reference.

Chemicals: Carageenan and Indomethacin was obtained from Sigma-Aldrich Germany. All the solvents used were of analytical grade produce from SD fine chemicals Mumbai.

Preparation of Extracts: For the preparation of ethanolic extract, leaves were collected, shade dried at room temperature, pulverized and extracted with ethanol in a soxhlet extractor for about 80 cycles. The extract was concentrated in a rotary flash evaporator and dried in desiccators. The dried extract was suspended in carboxy methyl cellulose and administered orally.

Preliminary Phytochemical Screening: The ethanolic extract was studied for its preliminary phytochemical screening for the detection of various plant constituents [4, 5].

Animals: Albino rats of wistar strain of the either sex (150-200gm) maintained under standard environmental conditions (27±2ºC light/dark cycle of 12 hrs) and fed with standard pellet diet (Goldmohor brand, Lipton India Ltd.) and *water ad libitum* was used for the present study. All the experimental protocols were approved by institutional Animal Ethics Committee.

Toxicity Studies: The 50% lethal dose of the EECP was estimated by the up and down stair case method[6]. Doses were administered orally at the dose of 100, 1000, 2000, 3000, 4000 and 5000 to six groups of animals. Control group received normal saline (10 ml/kg) orally. Signs and mortality within 24-72 hrs were noted.

Anti-inflammatory activity: The anti-inflammatory activity of drug extract was assessed by the method described by winter et al.,[7]. The rats were divided into three groups where six animals in each group were used for study. Acute inflammation was produced by the sub-plantar administration of 0.1 ml of 1%w/v Carageenan solution (SD Fine-Chemical Ltd) in normal saline solution in the left hind paw of rats. Group III treated with

ethanolic extract of *Cissampelos pareira* (EECP 400 mg/kg p.o.). Group II with standard drug indomethacin (10 ml/kg p.o.) and group I treated as control with normal saline. The standard and drug extract were given orally to the animals 30 minute prior to carageenan injection. The paw volume was measured before the injection and then at intervals of 30 minute for a period of 4 hrs after carageenan injection by mercury displacement method using plethysmograph. % inhibition of inflammation was calculated using the following formula:

% inhibition = [1- Vt / Vc] X 100

Vc represented edema volume in control and Vt edema volume in treated with test extracts.

Statistical analysis: Results are expressed as Mean ± SEM. The statistical analysis was performed by using unpaired student t-test for comparing test groups with control group. P value less than 0.05 were considered statistically significant[8].

Results - Acute Toxicity Studies: In the acute toxicity test sign of toxicity included lethargy, jerk, convulsion and death. The LD50 value of oral administered EECP was estimated to be 4 gm/kg.

Preliminary Phytochemical screening – Preliminary phytochemical screening of the EECP indicates the presence of tannins and bisbenzylisoquinoline alkaloids.

Anti-inflammatory activity- The result of EECP against carageenan induced paw edema is shown in Table – 1. The result shows that the ethanolic extract of *Cissampelos pariera* exhibited significant activity at dose of 400 mg/kg body weight.

As shown in table 1 ethanolic extract of *Cissampelos pariera* exhibited inhibition in rat paw edema 44.94 % where as standard drug showed 50.6% inhibition of inflammation.

Discussion – Indigenous drug system can be source of variety of new drugs which can provide relief in inflammation. The most widely used primary test to screen new anti-inflammatory agent measure the ability of a compound to reduce local edema induced in the rat paw injection of a phlogistic agent. This edema depend on the participation of kinins and polymorphonuclear leucocytes with there pro inflammatory factors including prostaglandins. [(9)] The development of edema in the paw of the rat after the injection of carageenan has been described as a biphasic event. The initial phase, observed around 1 hrs, is attributed to the release of histamine and serotonin, the second accelerating phase of swelling is due to the release of prostaglandin- like substances. It has been reported that the second phase of edema is sensitive to both clinically useful steroidal and nonsterodial anti-inflammatory agents [(10)]. Significant anti-inflammatory activity was observed for ethanolic extract of *Cissampelos pariera* in carageenan induced edema model. Hence the anti-inflammatory activity in *Cissampelos pariera* can be attributed due to the presence of alkaloids and tannins.

Table1- Effect of Indomethacin and EECP on Carageenan induced paw edema in rats

Groups	Dose (mg/kg p.o.)	Time after carageenan injection							
		1 hr		2 hr		3 hr		4 hr	
		EV (ml)	EI (%)	EV (ml)	EI(%)	EV (ml)	EI (%)	EV (ml)	EI (%)
Control	-	0.61±0.003	-	0.68±0.023	-	0.79±0.015	-	0.89±0.023	-
Indomet-hacin	10	0.52±0.012	14.7*	0.50±0.013	26.5*	0.49±0.083	37.9*	0.44±0.015	50.60*
EECP	400	0.56±0.005	8.19	0.49±0.014	27.94*	0.50±0.008	36.71*	0.49±0.018	44.94*

*Significant at $p<0.05$, P value was calculated by comparing with control by ANOVA followed by Student T- test, Values are expressed as Mean ± SEM

So from the above study it is quite apparent that the ethanolic extract of *Cissampelos pariera* plants possesses significant anti-inflammatory activity. The further study justifies its use in inflammation, pain and wound healing as suggested in the folklore medicines.

REFERENCES:

1. The Ayurvedic Pharmacopoeia of India, Ministry of Health and Family Welfare, Govt. of India, New Delhi, India. Part 1, 1, (2002):92-93.
2. Database on medicinal Plants used in Ayurveda and Siddha, Govt. of India, New Delhi 2004; 2: 438-450.
3. The Wealth of India, Raw Materials: CSIR Publication, India 1992; 3:591.
4. Kokate C K, Purohit A P, Gokhale S B: Textbook of Pharmacognosy, Nirali Prakashan Pune 2005; 31:593-97.
5. Khandelwal K R: Practical Pharmacognosy, Nirali Prakashan, Pune, India 2006; 16:149-156.
6. Winter C A, Risley E A and Nuss G W: Carageenan-induced edema in hind paw of rat as an assay for Anti-inflammatory drugs. Proc. Soc. Exp. Biol. Med 1962 111:544-547.
7. S M Hess and R C Milonig, Assay for Anti-Inflammatory Drugs. In: Lepaw H. Ward. PA, Editors. Inflammation, Mechanism and control. New York: Academy 1972: 1-12.
8. Woodson R F: Statistical methods for analysis of biochemical data Wiley, New York 1987: 315.
9. DamasJ. Remacle-Volon G. and Deflandre E., Further studies of the mechanism of counter irritation by Turpentine. Arch. Pharmacology 1986; 332: 196-200.
10. Beatriz B, Gerardo M, Arrrtonio J L, and Jose A S E: Anti-Inflammatory activity Urera baccifera (Urticaceae) in sprage dawley rats, Research paper available on line: http:// rbt.ots.ac.cr