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EVALUATION OF ANTIINFLAMMATORY AND ANALGESIC ACTIVITY OF *CEASALPINA PULCHIREMMA* SWARTZ IN EXPERIMENTAL ANIMALS

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ABSTRACT

Ceasalpina Pulchiremma swarts (FAM caesalpinaceae) popularly known as Peacock flower is well known for its diverse medicinal uses. It is an exotic, hardy, drought resistant shrub and is a striking ornamental plant widely grown in tropical gardens. It is also the country flower of the Caribbean island, Barbados. In India, it is found in the tropical rain forests. It is reported in the literature to be used as a remedy for intestinal worms, cough, and inflammation. The juice from the flowers is well known to cure sores. It is usually prescribed in bronchitis, asthma and malarial fever. In the present study, an attempt has been made to evaluate the antiinflammatory and analgesic activity of the chloroform and methanolic extract of the flowers on rational basis against standard drugs ibuprofen and pentazocin by carrageen induced rat paw edema method; tail flick method by analgesia in albino rats, mice by using the dose levels of 100 mg/kg and 200 mg/kg body weight. A significant activity ($P < 0.01$ to $P < 0.001$); antiinflammatory and analgesic activity was observed in the above models as compared to control. The present study indicates that *Caesalpina pulchiremma* floral extracts has potential antiinflammatory, and analgesic activity. The percentage inhibition of paw oedema and analgesia observed by the methanolic extract was found to be higher than the chloroform extract.

Key words: *Ceasalpina Pulchiremma*, Antiinflammatory, Analgesic.

INTRODUCTION

Caesalpina Pulchiremma Swartz, (Family: Caesalpinaceae), popularly known as the Peacock flower is an exotic shrub and is found in the tropical rain forests of India. The plant has been used in traditional system of medicine for helminthiasis and abortifacient purposes. It is also known for its anti carcinogenic, antimicrobial and antifungal activity. The present study was undertaken to evaluate the flowers of *Caesalpina Pulchiremma* for antiinflammatory and analgesic studies of chloroform and methanolic extracts[1-4].

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EXPERIMENTAL

Plant material

The flowers of *Caesalpina Pulchiremma* were collected locally from Guntur district, Andhra Pradesh during 2008.

Extraction of plant materials

The flowers of *Caesalpina Pulchiremma* were taken (2 kg) and were extracted by maceration by using solvent of chloroform and methanol. The extract was further concentrated using rotary vacuum to get the filtrate[5]. The yield obtained was 5.4 and 9 g. The color of the extract was reddish brown.

Evaluation of antiinflammatory activity

The antiinflammatory activity was assessed by the method suggested by Winter et al.[6] using carrageenan as phlogestic agent of adult Wistar albino rats of either sex weighing between 150-200 g. The selected albino rats were housed in groups of six. They were fasted over night and during the experiment but had free access to water. Both the extracts (100 mg/kg, 200 mg/kg) were suspended in 0.5% w/v sodium carboxy methyl cellulose and administered orally 30 min before injection of carrageen an (0.1 mL of 1% w/v solution) in normal saline into sub planter region of left hind paw of each rat. The contalateral paw was injected with an equal volume of saline. The control group received 0.5 w/v sodium CMC (2 mL/kg), standard group ibuprofen (10 mg/kg) and the tested groups received the chloroform and methanolic extracts of *Caesalpina Pulchiremma* (100 mg/kg and 200 mg/kg), respectively. The paw volumes were measured plethysmographically at each hour, for 4 hr. after carrageenan and compared with the standard treated group. Results are recorded in Table 1.

Evaluation of analgesic activity

Tail flick method

The analgesic activity was tested using analgesiometer[7]. Mice (125-150 g) were randomly distributed in control and test groups of four animals each. The chloroform and methanolic extracts (100 and 200 mg/kg) were administered to each test group orally after 12 hrs. Fast and standard drug pentazocin (30 mg/kg) was administered to the control group orally. The basal reaction time was noted at 15 min, 30 min, 45 min and 60 min. After administration, the tip of the mice was placed in the radiant heat of analgesiometer at $55^{o}C \pm$

0.5°C. The actual tail flick response of mice was calculated and compared with control group. Results are recorded in Table 2.

Table 1: Antiinflammatory activity of *Ceasalpina pulchiremma* flowers extracts on Carregeenan induced paw oedema in albino rats

Group	Treatment	Dose	Volume of mercury displaced (mL)				% Inhibition of paw oedema at 4 hr
			0 hr	1 hr	2hr	4 hr	
I	Control (0.5% sodium CMC)	2 mL/ kg	0.967 ± 0.015	1.277 ± 0.026	1.36 ± 0018	1.457 ± 0.019	---
II	Ibuprofen	10 mg/ kg	0.986 ± 0.196	1.27 ± 0.014	1.327 ± 0.018	1.28 ± 0.017**	41.105
III	Chloroform extract	100 mg/kg	0.99 ± 0.014	1.323 ± 0.021	1.35 ± 0.015	1.36 ± 0.009*	26.178
IV	Chloroform extract	200 mg/kg	0.99 ± 0.017	1.29 ± 0.015	1.33 ± 0.015	1.35 ± 0.015*	28.173
V	Methanol extract	100 mg/kg	0.993 ± 0.001	1.293 ± 0.009	1.333 ± 0.011	1.347 ± 0.018*	29.583
VI	Methanol extract	200 mg/kg	1.013 ± 0.01	1.293 ± 0.009	1.327 ± 0.01	1.333 ± 0.013**	37.604

Results expressed as mean ± SEM from six observation *p < 0.01, **p < 0.001

Table 2: Analgesic activity

Dose	Treatment	Dose	Basal reaction time (sec.)	Reaction time (sec.)			
				15 min	30 min	45 min	60 min
I	Control (0.5% sodium CMC)	2 mL/ kg	2.17 ± 0.281	2.5 ± 0.204	2.67 ± 0.192	2.67 ± 0.192	2.67 ± 0.192
II	Pentozocin	30 mg/ kg	2.33 ± 0.192	3.0 ± 0.408	4.67 ± 0.385	6.33 ± 0.304**	8.67 ± 0.451**
III	Chloroform extract	100 mg/kg	2.17 ± 0.281	3.17 ± 0.28	3.5 ± 0.204	4.5 ± 0.391*	5.5 ± 0.312**

Cont…

Dose	Treatment	Dose	Basal reaction time (sec.)	Reaction time (sec.)			
				15 min	30 min	45 min	60 min
IV	Chloroform extract	200 mg/kg	2.67 ± 0.192	3.33 ± 0.192	4.83 ± 0.436	5.83 ± 0.549**	6.83 ± 0.683**
V	Methanol extract	100 mg/kg	1.83 ± 0.28	2.33 ± 0.192	4.0 ± 0.33*	5.0 ± 0.236**	6.67 ± 0.304**
VI	Methanol extract	200 mg/kg	2.0 ± 0.236	3.17 ± 0.436	4.5 ± 0.391*	5.83 ± 0.436**	7.33 ± 0.304**

Results expressed as mean ± SEM from six observations *p < 0.01, **p < 0.001

RESULTS AND DISCUSSION

The chloroform and methanol extracts of the flowers of *Ceasalpina Pulchiremma* showed significant antiinflammatory and analgesic activity at both the dose levels (100 mg/ kg and 200 mg/kg). The percentage inhibition of paw oedema by the methanol extract was found to be higher than the chloroform extract. The degree of analgesia observed with methanol extract reveled a higher degree of analgesic activity than the chloroform extract.

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