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ORIGINAL RESEARCH ARTICLE

Anti Inflammatory, Analgesic and Antipyretic Activity of P*ergularia daemia* forsk.

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ABSTRACT

The pharmacological and chemical constituents of plants from the plant *Pergularia daemia* Forsk which is widely used in folk medicine. In the present study, the analgesic, antipyretic, anti-inflammatory of Petroleum ether and Chloroform extract of plant of *Pergularia daemia* Forsk were studied .The analgesic activity was found out by eddy's hot plate method by using standard Diclofenac sodium . The antipyretic activity was found out by yeast induced pyrexia method by using standard Paracetamol. The anti-inflammatory activity was found out by Carragenan induced paw edema method by using standard Diclofenac sodium. Preliminary phyto chemical screening showed the presence of glycosides, alkaloids, phytosterols, saponins, fixed oils and fats, flavonoids and coumarins are present in extracts. In carrageenan induced paw odema method the chloroform extract of *pergularia daemia* showed more significant inhibition than petroleum ether extract. The results were found to be highly significant ($p<0.01$) in comparison to the control. In eddys hot plate method the chloroform extract of *pergularia daemia* exhibited significant analgesic activity than petroleum extract. In antipyretic activity the chloroform and pet ether both extracts having significant activity.

Keywords: *pergularia daemia* , Analgesic, Antipyretic, Anti inflammatory.

INTRODUCTION

Pergularia daemia **,**Synonyms *Pergularia extensa* N.E.Br, Daemia extensa R.Br. Family (Asclepiada cea). It find through out the hotter parts of India, upto 900m. Leaves are bitter, the rmogenic, anthelmintic and depurative. The juice of the leaves is used as an expectorant in catarrhal affections of the lungs. It is given internally in asthma and is applied locally to rheumatic swellings. In combination with lime or ginger it is given internally in amenorrhea and dysmeno rrhoea.[1,2,3,4,5]. Fruits are acrid, thermogenic and digestive and are useful in vitiated conditions of kapha and dyspepsia. The plant is astringent, acrid, thermogenic, emetic and expectorant, emmenagogue, and anthelmintic, antipyretic and laxative. It is useful in urethrorrhoea, strangurgy, metropathy, inflammations, vitiated conditions of vata and kapha, cough, asthma, amenorrhoea, dysmenorrhoea, intermittent fevers and leucoder ma[6, 7, 8,9,10]. A perennial twinning herb with milky juice when brusied and grows extensively through out India. Various parts of this plant have been reported to be used in ayurveda medicine. The fresh stems and leaves were collected in and around Madurai, Tamilnadu. Leaves are simple, opposite, margins ciliate, suborbicular, cordate, acuminate, and velvety pubescent beneath, margins ciliate. Flowers are axillary, long - peduncled, umbellate or corymbose, clusters, greenish yellow or dull white, tinged with soft spines. Seeds are many, ovate, truncate at the apex, densely velvety pubescent on both sides. Fruits are reflexed follicles with long beak and soft spines[11-16].

Materials and methods

The plant materials were collected from Virudhunagar District, Tamilnadu, India and authenticated by Dr, Stephen, Dept. of Botany, The American College, Madurai, Tamilnadu, India. Voucher specimens have been kept in our laboratory for future reference.

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Extraction

The stem and leaves of the plant were collected in the month of June and dried in the shade. The shade dried leaves and stems are powdered separately to get coarse powder. About 800g of dried and coarsely powdered stem was extracted first with petroleum ether at 40-60^{o} C, by continuous hot percolation, using soxhlet apparatus. The extraction was carried out, by using solvents of increasing polarity starting from petroleum ether and chloroform respectively. The extraction was continued for 72 hrs.The petroleum ether extract was filtered and concentrated to a dry mass by using vacuum distillation. A dark green residue was obtained. (12gm). The mark left, after petroleum ether extraction was taken and subsequently extracted with chloroform for 72 hrs. The chloroform extract was then filtered and concentrated to the dry mass. A dark brownish green residue was obtained. (15 gm).The mark left after the chloroform extract was taken and subsequently extracted with ethanol upto 72 hrs. The ethanol extract was then filtered and concentrated to a dry mass. A dark green colored residue was obtained. (16 g).

Table No.1: DATA SHOWING THE PRELIMINARY PHYTOC HEMICAL SCREENING OF THE VARIOUS LEAF EXTRACTS OF *PERGULARIA DAEMIA*

CONSTITUENTS	PET.ETHER EXTRACT	CHLORO FORM EXTRACT	ETHANOL EXTRACT
Carbohydrates	_	-	-
Glycosides	+	+	+
Alkaloids	+	+	+
Phytosterols	+	+	+
Saponins	+	+	+
Fixed oils & fats	+	+	+
Tannins	-	-	-
Proteins & amino acids	-	-	-
Flavanoids	+	+	+
Coumarins	+	+	+

\+ Indicates positive test result
\- Indicates negative test result

Preliminary phyto chemical investigation[17, 18, 19, 20]

The petroleum ether extract, chloroform extract and ethanol extract of *Pergularia daemia forsk* showed the presence of glycosides, alkaloids, phytosterols, saponins, fixed oils and fats, flavonoids and coumarins.

TABLE 3: EFFECT OF DIFFERENT EXTRACTS OF *PERGULARIA DAEMIA* ON ANALGESIC ACTIVITY IN RATS

Treatment group	Dose	Time in minutes					
		0 min.	30 min.	60 min.	90 min.	120 min.	180 min.
Control	10ml/kg Normal saline	2.4 ± 0.22	2.2 ± 0.23	2.0 ± 0.16	2.1 ± 0.14	1.9 ± 0.28	2.5 ± 0.19
Standard	Aspirin 200 mg/kg	2.4 ± 0.21	4.3 ± 0.16	6.2 ± 0.32	5.9± 0.26	6.2 ± 0.31	6.0± 0.22
Pet. ether extract	100 mg/kg	2.2 ± 0.19	3.6± 0.21	5.1± 0.23	4.8± 0.11	4.5± 0.20	4.9± 0.10*
Chloroform extract	100 mg/kg	2.0 ± 0.35	3.8 ± 0.13	5.6±. 15	5.4± 0.14	5.6± 0.26	5.4± 0.14**

Values are expressed as Mean ± SEM
**-indicates significant analgesic activity compared with control

Anti inflammatory activity[21, 22, 23]

Albino rats of Wister strain (150-200 g) of either sex were procured from the animal house. They were housed in standard poly propylene cages and kept under controlled room temperature in a 12 hr light- dark cycle. The rats were given a standard laboratory diet and water and *ad libitium*. Food was withdrawn 12 hr before and during the experimental hours. The animals were divided into 4 groups. Acute inflammation was produced by sub plantar injection of 0.1 ml of 1% suspension of carragenan with normal saline, in the right hind paw of the rats.One hour after oral administration of the drug. The paw odema was measured plethysomometrically at 0 and 3 hours after the carragenan injection. Group 1 received normal saline (10 ml/kg/orally) served as normal control. Group II received Diclofenac sodium (10ml/kg-IP, Served as standard control. Group III treated with petroleum ether extract of pergularia daemia (100 mg/kg/orally) suspended with 1% CMC. Group IV treated with chloroform extract of pergularia daemia (100 mg/kg/orally) suspended with 1%CMC.

Analgesic activity[24, 25]

The analgesic activity of the extracts was screened by employing tail flick method. Rats of either sex weighing between 150-200 gm were

taken in 4 groups of each 6 animals. Aspirin (200 mg/kg) was used as a standard drug for comparison of analgesic activity. Tail flick response was evoked by placing rat tail over a wire heated electrically. The intensity of heat was adjusted so that the base line tail flick latency averaged 3-4 s in all the animals. Cut off period of 15 s was observed to prevent the damage to the tail.

Antipyretic activity[26, 27, 28]

The antipyretic activity of the extracts was screened by using yeast induced hyperpyrexia method. Wistar rats of either sex weighing between 150-200 gm were selected and divided into seven groups each having six animals. They were maintained at a constant temperature of 24-25 ^{0} for 24 hr. before pyrexia was induced by S.C injection of 2 ml of 15% brewer's yeast suspension in saline solution. After 18 hrs of yeast injection, the extracts were suspended with 1%CMC and administered orally. Paracetamol (200 mg/kg) was used as a standard drug for comparison of antipyretic activity .Rectal temperatures were noted at 30 min intervals.

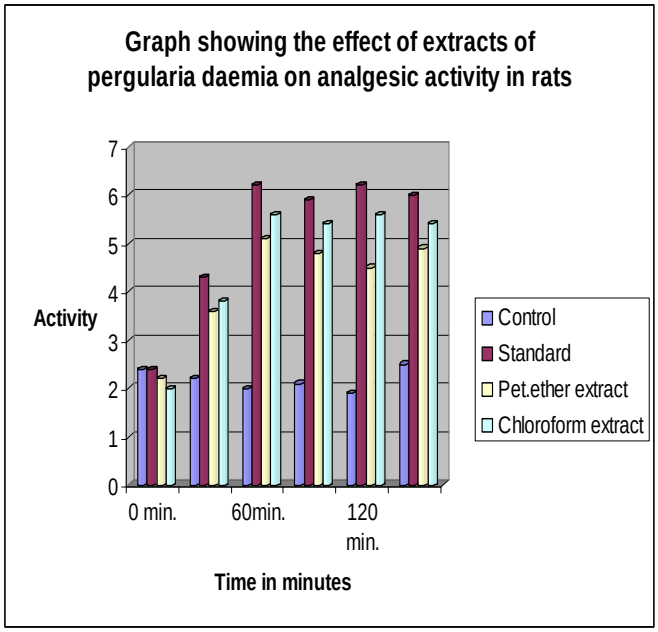
Statistical analysis[29]

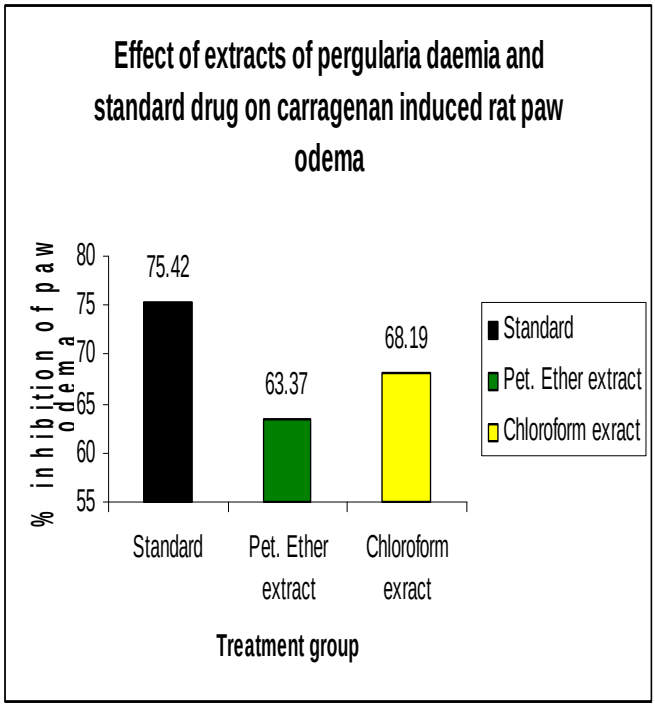
Statistical analysis was done by one way ANOVA followed by Newman level's multiple range test.

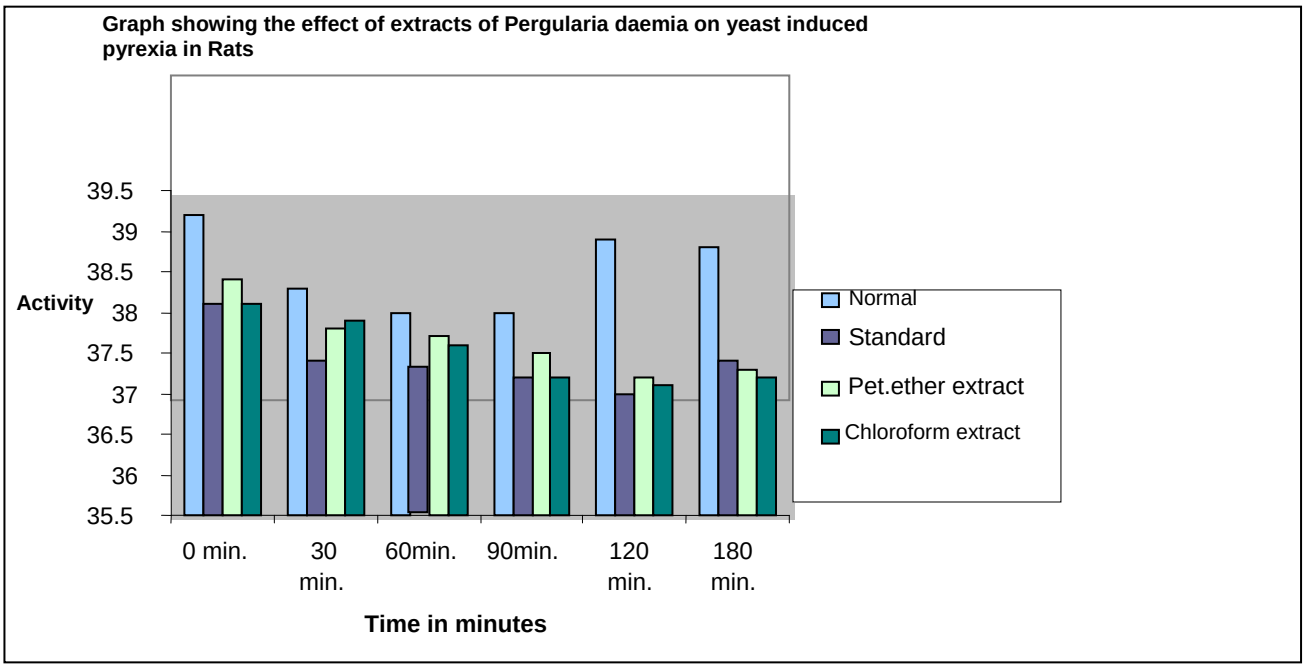
A P value<0.01 was considered significant.

Results and Discussions

In this acute inflammation model, chloroform extract and petroleum ether extract of *pergularia daemia* (100 mg/kg) and the standard drugs produced significant inhibition of paw edema as compared to the control. All the extracts were found to be less effective than diclofenac sodium. However, the chloroform extract of *pergularia daemia* showed more significant inhibition than petroleum ether extract. The results were found to be highly significant ($p<0.01$) in comparison to the control. Carrageenan-induced hind paw edema is the standard experimental model of acute inflammation. Carragenan is the phlogistic agent of choice for testing anti inflammatory drugs as it is not known to be antigenic and is devoid of apparent systemic effects. More over, the experimental model exhibits a high degree of reproducibility. Carragenan induced odema is a biphasic response. The first phase ismediated through through the release of histamine, serotonoin and kininins where as the second phase is related to the release of prostaglandins and slow reacting substances which peak at 3 hr. The *pergularia daemia* extracts produced significant inhibition of carrageenan induced paw odema. The inhibition was how ever, less than that of the standard drug. The chloroform extract of *pergularia daemia* exhibited significant analgesic activity than petroleum extract. The chloroform & Pet. Ether extracts of *Pergularia daemia* exhibits significant antipyretic activity. The petroleum ether extract, chloroform extract and ethanol extract of *Pergularia daemia forsk* showed the presence of glycosides, alkaloids, phytosterols, saponins, fixed oils and fats, flavonoids and coumarins.







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