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PHARMACOLOGICAL EVALUATION OF EXTRACT OF *TANACETAM PARTHENIUM.L* FLOWER DISK FLORETS FOR ANXIOLYTIC AND ANALGESIC ACTIVITY IN RODENTS

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ABSTRACT

Pain is a symptom of many diseases requiring treatment with analgesics. Severe pain due to cancer metastases needs the use of strong analgesics that means opioid drugs. The addiction liability of opioids led to intensive research for compounds without this side effect. Many approaches have been used to differentiate the various actions of strong analgesics by developing animal models not only for analgesic activity but also for addiction liability. The study was undertaken to evaluate the analgesic activity of *Tanacetam parthenium* flower extracts using Tail flick method. The study comprised of three treatment groups (control, standard and test – *Tanacetaam parthenium aqueous extract*) all with five animals in each group. At the end of the study aqueous extract showed significant analgesic activity when compared with standard and control treatment groups.

Key Words: *Tanacetum parthenium,* Tailflick test, Antinociceptive Activity, Flower Disk Florets.

INTRODUCTION

Tanacetum parthenium is a medicinal herb which is found in many old gardens and is also occasionally grown for ornamental purposes [1-5]. The plant grows into a small bush around 46cm (18inch) high ,with citrus-scented leaves and is covered by flowers, reminiscent of daises. In 1960 parhenolide was first reported as a new SQL from feverfew. Its pharmacological action is similar to that of aspirin. The leaves of this plant are eaten or used as infusions in conditions like arthritis, migraine and asthma. It has also being claimed to be useful for treating conditions like tinnitus, vertigo, fever, menstrual disorders, difficulty in labour, stomach-ache, toothache and insect bites [6, 7]. The sesquiterpene lactones biosynthetic pathway was influenced by environmental conditions. In addition, some biological activities were investigated including the analgesic, anti-inflammatory and antipyretic activities, and uterine stimulant effects were screened for the first time and the cytotoxic effect was also supplied.

The antispasmodic this herb is used in traditional medicine in the countries like Denmark for the treatment of epilepsy [8]. Evaluation of the effects of this herb on patients with epilepsy showed that ethanolic extract of this herb has a great affinity for the place of benzodiazepines on GABA receptor. Since parthenolide stability can vary with storage conditions feverfew should be stored in a cool, dry, dark environment [9-11]. The species of genus *Tanacetum* have been used in popular medicine as expectorants, antiseptic vermifuges, and spasmolytics. In Bulgaria, the dry leaves and flowers of *T. vulgare* are used as spasmodic, antiseptic and for protecting against dandruff [12, 13].

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MATERIALS AND METHODS

Animals

Wistar rats of either sex (200-300g) were maintained for 7 days in the animal house under standard conditions temperature (24 ± 10 C), relative humidity (45-

55%) and 12:12 light: dark cycle. The animals were fed with standard rat pellet and water ad libitum. The animals were allowed to acclimatize to laboratory conditions 48 h before the start of the experiment.

Materials

Group-1 - Control group (0.9% normal saline 1ml/ kg orally)

Group-2 – Standard group (Pentazocin 20 mg/kg i.p) – Analgesic activity (Diazepam 2mg/kg i.p) - Anxiolytic activity

Group-3 – Aqueous flower extract of TP (100mg/kg i.p)

Purpose and Activity

The experiment was mainly to find out the intensity of the analgesic and anxiolytic activity of plant extract by comparing with standard drugs. Analgesic activity was done by using Tail flick analgesiometer and anxiolytic activity by light dark box model.

Tail-flick test

Procedure

Healthy male wistar rats (150 – 250g) were weighed and marked with picric acid. The tip of the tail (last 1-2 cms) was placed on the radiant heat source and basal time was noted down. The tail –withdrawal from the heat (flicking response) is taken as the endpoint. The time in seconds required for flicking response was recorded as the reaction time. Normally a rat withdrawals its tail within 4-5 sec. A cut off period of 10-12 sec was observed to prevent damage to tail. At least 3-5 basal reaction times for each mouse at a gap of 5 minutes were taken to confirm normal behaviour of the animal. Animal were treated with drugs as per the above schedule and the reaction time is recorded at 5, 15, 30 and 60 minutes after the drug administration. Percentage increase in reaction time is calculated at each time interval.

Light- Dark Box test

Procedure

Many authors have used the light dark box in different dimensions for their research in different behavioural aspects. Typical dimensions of the compartment are generally one third for the dark compartment and two thirds for the light compartment. The model is based on the observation that although nocturnal rodents such as mice will naturally tend to explore a novel environment, open fields appears to have aversive properties which inhibit exploratory behaviour. The apparatus consisted of two polyvinylchloride boxes of the same size. One was darkened with cardboard and the other was brightly illuminated; an opaque plastic tunnel separated the two compartments

STATISTICAL ANALYSIS

All the values are expressed as mean ± SD. Statistical significance was determined using two way – ANOVA, followed by Dunnett's test. $P<0.05$ was considered to be significant.

RESULTS

The *Tanacetum parthenium.L* flower extracts has shown significant analgesic activity when compared with standard and control treatment groups using tail flick method (Figure No.1 & Table No: 1).

Table 1. Analgesic activity of leaf extract *Tanacetum parthenium.L* of using tail flick analgesiometer

S.No	Treatment	Reaction Time in Seconds (Mean± SEM)		
		30 min	60 min	90 min
1	Control	2±0.47	3±0.47	2.25±0.72
2	Standard Pentazocine (20mg/kg)	3±0.81	6±0.94	7±1.49
3	TPAE - (100mg/kg)	4±0.66	7±1.05	8±1.05

Table 2. Anti anxiety activity of leaf extract *Tanacetum parthenium.L* of using the light dark box method for 5min as evaluation time.

S.No	Treatment	Groups	Time spent in dark box (sec)				Time spent in light box (sec)				Avg. no. of light box entries	Mean ± SEM for time spent in Light Box	Mean ± SEM for entries in Light Box
			0	15	30	60	0	15	30	60			
1)	Control	A	242	239	240	220	58	61	60	80	4	54.62 ± 10.57	3.5 ± 0.645
		B	264	266	258	255	36	34	42	45	5		
		C	228	224	203	227	72	76	97	73	3		
		D	274	271	263	252	26	29	37	48	2		
2)	Standard	A	142	125	112	107	158	175	188	193	9	173.43 ± 2.15	7.7 ± 0.75
		B	163	147	115	102	137	153	185	198	7		
		C	134	126	120	121	166	174	180	179	6		

		D	141	132	121	117	159	168	179	183	9		
3)	Chloroform extract	A	117	105	96	98	183	195	204	202	11	200.43 ± 2.72	10.5 ± 0.645
		B	112	110	94	81	188	190	206	219	9		
		C	107	91	94	76	193	209	206	224	12		
		D	115	111	96	90	185	189	204	210	10		

Fig 1. Determining analgesic activity of *Tanacetum Parthenium L* by considering treatment group on X axis and flicking response time on Y axis.

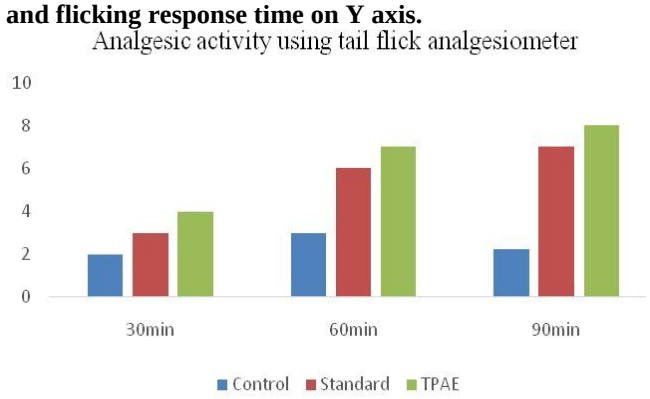
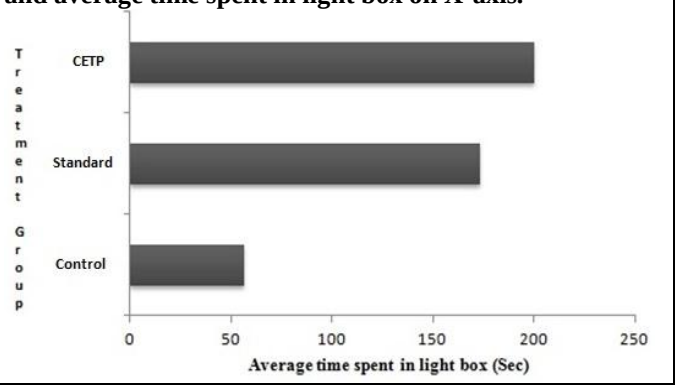


Fig 2. Determining anxiolytic effect of *Tanacetum Parthenium.L* by considering treatment group on Y-axis and average time spent in light box on X-axis.



CONCLUSION

Analgesic and anxiolytic models for studying drugs or conditions that affect nociceptive process was standardized and evaluated by using flower extracts of *Tanacetum parthenium.L*. The extract of *Tanacetum Parthenium L* has shown significant analgesic activity when compared with standard and control treatment groups using tail flick method and light and dark box may be due to the presence of sesquiterpene lactones.

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Nil

CONFLICT OF INTEREST

No interest

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