



**PHARMACOLOGICAL EVALUATION OF EXTRACT OF *TANACETAM PARTHENIUM* .L  
FLOWER DISK FLORETS FOR ANTINOCICEPTIVE 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 *Tanacetum parthenium* flower extracts using Tail flick method. The study comprised of three treatment groups (control, standard and test – *Tanacetum 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.

**Keywords:** *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. 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<sup>1</sup>. 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<sup>2</sup>. 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<sup>3</sup>. The antispasmodic this herb is used in traditional medicine in the countries like Denmark for the treatment of epilepsy. Evaluation of the effects of this herb on patients with epilepsy showed that ethanolic

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extract of this herb has a great affinity for the place of benzodiazepines on GABA receptor<sup>4</sup>. Since parthenolide stability can vary with storage conditions feverfew should be stored in a cool, dry, dark environment<sup>5</sup>. The species of genus *Tanacetum* have been used in popular medicine as expectorants, antiseptic vermifuges, and spasmolytics<sup>6</sup>. In Bulgaria, the dry leaves and flowers of *T. vulgare* are used as spasmodic, antiseptic and for protecting against dandruff.

### Materials and Methods

#### Animals

Wistar rats of either sex (200-300g) were maintained for 7 days in the animal house of Chalapathi Institute of Pharmaceutical Sciences, Guntur under standard conditions temperature ( $24 \pm 10$  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. 5 rats/group were used in all sets of experiments. All the experiments were conducted after obtaining permission from the Institutional Animal Ethics Committee (IAEC) Chalapathi Institute of Pharmaceutical Sciences, Guntur.

#### Materials

- Group-1 - Control group (0.9% normal saline 1ml/ kg orally)
- Group-2 – Standard group (Pentazocin 20 mg/kg-1 i.p)
- 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 activity of plant extract by comparing with standard drugs. Analgesic activity was done by using Tail flick analgesiometer.

#### 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 withdraws 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.

##### Statistical Analysis:

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

##### Results and Discussion:

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 No 1: Response time (Tail flicking)**

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

**Conclusion:**

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

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