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ASSESSMENT OF *TRAGIA PLUKENETII R. SMITH* LEAF EXTRACTS FOR PERIPHERAL ANALGESICACTIVITY BY USING ACETIC ACID INDUCED WRITHING METHOD

Y. Sarath Kumar[*1], P. Chinna[1], K. Ashok Kumar[1], M. Sathish Kumar[1]

[*1]Department of Pharmacy, Chalapathi Institute of Pharmaceutical Sciences, Guntur, Andhra Pradesh, India.

ABSTRACT

The aim of this study was to assess the effect of *Tragia plukenetii R. Smith* leaf extracts on the electrical threshold and its influence on the acetic acid induced writhing in mice. The preclinical evaluation of standardized benzene, chloroform, and methanolic extracts of the leaves of *Tragia plukenetii R.* smith was carried out for analgesic activity using acetic acid induced writhing method in swiss albino mice. The methanolic leaf extract of *Tragia plukenetii R. Smith* has shown significant analgesic activity when compared with all the other groups using acetic acid induced writhing method. The results conclusively demonstrate the efficacy of *Tragia plukenetii R. Smith* methanolic leaf extracts for peripheral analgesic activity.

KEYWORDS

Tragia plukenetii, peripheral analgesia**,** narcotic analgesics and non narcotic analgesics anti-nociceptive.

Author for correspondence:
Y. Sarath Kumar,
Department of Pharmacy,
Chalapathi Institute of Pharmaceutical Sciences, Guntur, Andhra Pradesh, India.

Email: yandurusarathkumar@gmail.com.

INTRODUCTION

The whole plant of *Tragia plukenetii R. Smith* (Family: Euphorbiaceae) is a erect, sub erect or prostrate herb, sometimes annual, up to 90 cm long, rarely more and liansscent; indumentums sparse, mostly of painful stinging hairs, distributed throughout India from Punjab and lower Himalayas eastwards to Assam and Meghalaya, ascending up to an altitude of 750 meters and southwards to Kerala[1,2]. Analgesic models for studying drugs are conditions the effect cognitive processes rely on introduction of stimuli to induce an analgesics state

within organism. The nature of this state, and the interpretation of pain, is assessed by the response to the pain in the presence and absence of agents and more generally defined as an "enhancement of analgesic process". Based on the pain behavioral model studying the neurobiology of pain can be broadly classified into two types: exteroceptive (the pain for analgesic originating outside the body) or introceptive (the pain for analgesic originating inside the body).

Thus for measuring the analgesic many instruments came into existence such as randall-selitto-test, tail flick test, hot plate test. Most of the currently used paradigms for pain are hot plate method, randall-selitto-test, tail flick test and acetic acid induced writhing method. The main aim of the present of the study is to investigate the effects of *Tragia plukenetii R. Smith* leaf extracts for analgesic activity using this acetic acid induced writhing model.

Analgesia is defined as a state of reduced awareness to pain without loss of consciousness and analgesics are substances which relives pain by acting in the CNS or peripheral mechanisms, without significantly altering consciousness. There two types of available analgesics:

- Opioid (narcotic) analgesics: e.g., morphine, codeine, papaverine etc.
- Non opioid (non narcotic) analgesics: e.g., Aspirin, Indomethacin, Ibuprofen Diclofenac, naproxen etc.

In laboratory, experimentally pain full reactions can be produced by applying noxious (unpleasant) stimuli such as (i) thermal (radiant heat as a source of pain), (ii) chemical (irritants such as acetic acid bradykinin) and (iii) physical pressure (tail compression). In practice, commonly used procedures are tail flick (tail-withdrawal from the radiant heat) method using analgesiometer, hot plate (jumping from the hot plate at 55ºC) method and acetic-induced writhing method.

Painful reactions in animals may be produced by the chemical also. Intraperitoneal injection of phenylquinone, bradykinin or acetic acid produces pain reaction which is characterized as a response. Writhing induced by acetic acid is a painful reaction which can well be characterized by observable sign such as stretching, torsion to one side, drawn up of hind limbs, twining of trunk (ophistotonus) and retraction of abdomen. Analgesics, both narcotics and non- narcotic type, inhibit writhing response[3-7].

EXPERIMENTAL ANIMALS

All experimental protocols and procedures were approved by the Institutional Animal Ethics Committee of Chalapathi Institute of Pharmaceutical Sciences. Male swiss albino mice between 8 and 10 weeks old, weighing 20-25 g, were used throughout the study. The animals were housed in standard laboratory conditions (12-h light/dark cycle, 21 ± 1°C, and relative humidity of 55 ± 5%) with free access to food and water prior to the experiments. After 7 days of acclimatization to laboratory conditions, the animals were randomly assigned to experimental groups, each consisting of 5 mice. Each animal was used only once in the experimental procedures. All experiments were carried out between 9 a.m. and 3 p.m.

MATERIALS AND METHODS

Treatment Groups

Group-1

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

Group-2

Standard group (Pentazocin 20 mg/kg-1 i.p)

Group-3

Benzene leaf extracts (TPBE 100mg/kg i.p)

Group-4

Chloroform leaf extracts (TPCE 100mg/kg i.p)

Group-5

Methanolic leaf extracts (TPME100mg/kg i.p)

Procedure

Healthy male swiss albino mice (20 – 25g) were weighed marked and divided into 5 groups. 1%v/v acetic acid solution (Inject 1 ml/100gm of body weight of mouse) is administered to the first control group and they are placed individually for observation. The time for onset of writhes is noted. The number of abdominal contractions, trunk twist

response and extension of hind limbs as well as the recorded during a period of 10 minutes. The remaining treatment group animals received subcutaneously pentazocine (21mg/kg), TPBE, TPCE and TPME (100mg/kg) respectively. After 15 minutes, acetic acid solution is injected to these treatment group animals. The onset and severity of writhing response is observed for a period of 10 minutes.

Statistical Analysis

All the values are expressed as mean ±SD. number of animals showing such response is 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 methanolic leaf extracts has shown significant analgesic activity when compared with benzene and chloroform leaf extracts and control treatment groups using acetic acid induced writhing response (Table No.1 and Figure No.1).

Table No.1: Acetic acid induced writhing test

S. No	Treatment	No of Writhing
		Mean± SEM
1	Control	25±1.41
2	Standard (Phentazocine21mg/kg)	15±1.41
3	TPBE - (100mg/kg)	20±2.35
4	TPCE - (100mg/kg)	18±0.94
5	TPME - (100mg/kg)	16±1.05

Control vs Standard $p < 0.001$; Control vs TPCE (100 mg/kg) $p < 0.01$; Control vs TPME (100 mg/kg) $p < 0.001$.

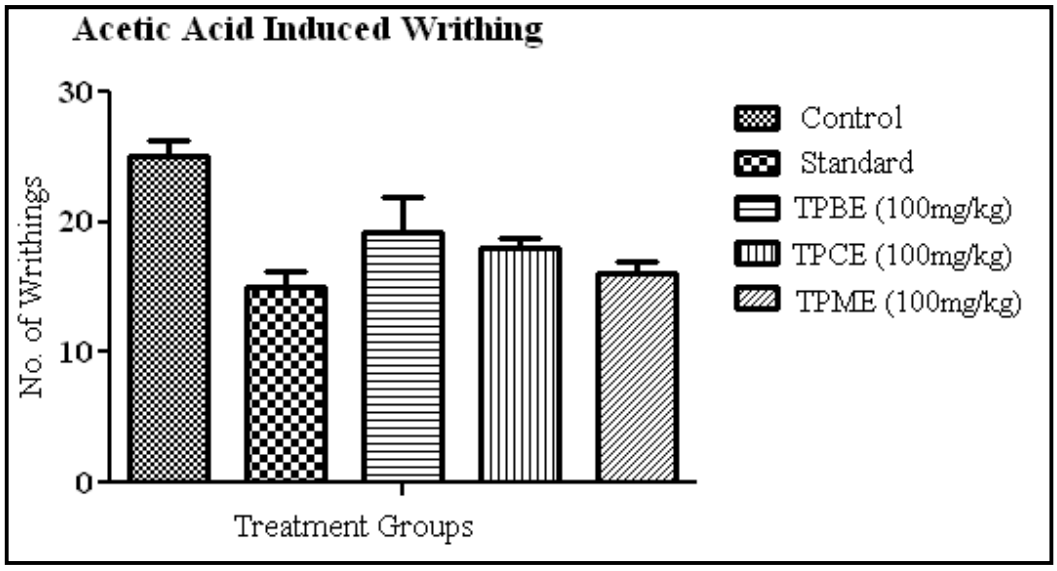

Figure No.1: Analgesic activity by acetic acid induced writhing test

CONCLUSION

Analgesic models for studying drugs or conditions that affect cognitive process was standardized and evaluated by using leaf extracts of *Tragia plukenetii R. Smith*. The methanolic leaf extracts has shown significant analgesic activity when compared with benzene and chloroform leaf extracts and control treatment groups using acetic acid induced writhing method may be due to the presence of flavonoids.

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