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Research article

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### Evaluation of analgesic effect of aqueous extract of physalis minima flowers & leaves in albino mice

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#### ABSTRACT

##### Background

Physalis Minima is a commonly known as Ground cherry or Sun berry. It belongs to the family solanaecia. It is a common species found in India & posses Anti-inflammatory, analgesic antipyretic, Antifertility Antimicrobial activity, New leishmanicidal ,Antiulcer and anti-oxidant activity etc..

##### Aims & Objectives

Evaluation of analgesic activity of Physalis Minima flowers & leaves.

##### Materials and methods

48 adult albino mice (50 g body weight) were used in this study. Which were divided in to 8 groups containing 6 mice in each group. Aqueous eactract of physalis minima flowers and leaves are used for the evaluation of analgesic activity by tail flick and hot plate method by oral administration at doses of 100,200, 400 mg/kg body weight in healthy albino mice.

##### Results

The Aqueous extract of Physalis Minima leaves and flowers at doses of 100,200, 400 mg/kg body weight showed significant analgesic activity when compared with the control and standard drug. Results are expressed as mean  $\pm$  standard error of mean (SEM). Data was analyzed by one way ANOVA (analysis of variance). P value less than 0.01 considered as significant.

##### Conclusion

Aqueous Extract of Physalis Minima flowers & leaves at all different doses posses analgesic effect

**Keywords:** Aqueous extract, Flowers, Leaves, Physalis minima.

## INTRODUCTION

Pain is a most frequent reason for visiting a doctor. Despite several available analgesics, unreleased pain remains major health care issue. Pain is defined by the international association for the study of pain (IASP) as an unpleasant sensory and emotional experience associated with actual or potential tissue damage, or is described in terms of such damage. Pain is thus primarily a biological warning system, which becomes evident from the severe pathologies. Pain classified in to different types and there are many different types of drugs are present to treat the pain and as well as they produce many side effects [1]. Plants have been a major source for the man. He used plants for therapeutic applications ever since he concerned about his health. The world has depended on the useful possessions of plants as a very wonderful source of medicine since many centuries. [2] plants are major natural supply of valuable compounds that become a lead for the expansion of novel drugs. [3]. The use of plant based medicine in traditional medicine has been given great considerations because they are cheap and have little side effects, and, according to the World Health Organisation (WHO), about 80% of the world population is still depends mainly on plant – based drugs. [4] Most of the drugs which are used for anti-inflammatory and analgesic effects are synthetic in nature and prolonged use of them causes severe side effects. Plants still remain as good resource of novel molecules that can be aid in the development of novel drugs. *Physalis minima* belongs to the family of solanaceae) is commonly known as Ground Cherry or Sunberry.[5] It is traditionally used as diuretic, purgative, analgesic, anthelmintic, febrifuge, vermifuge, abortifacient, etc. Many steroidal lactones have been identified from the plant and it has been reported to possess antifertility, hypoglycemic, cytotoxic, antiulcer, antibacterial, anti-inflammatory, analgesic, antipyretic, antimalarial, amylase, lipase and alpha glucosidase inhibitor activity and anti-gonorrhoeal activity. [6 - 14]

## METHODOLOGY

### Plant material

*Physalis minima* Plant Collected From City Of Vijayawada, Krishna (dt) Andrapradesh. Authenticated By Dr.Lalitha Kumari Asst Prof ,S&H.

Collected leaves and flowers were washed thoroughly under running water for 2 – 3 times. Washed leaves were dried under the shade for 15 days. The dried leaves were powdered and stored in a sterile bottle at room temperature.

### Preparation of plant extract

Plant leaves & flowers washed thoroughly, air dried, & prepared a soft powder. 1gm of powder weighed and soaked in 10ml of distilled water for 24 hrs, later filtered that solution with filter paper. The drug given according to body weight. The drug was prepared freshly for each day.

### Animals

Albino mice either sex of average weight of 50 gms were obtained from National Institute of Nutrition Hyderabad, and maintained at the central animal house of ASRAM medical college, Eluru were used for the study. Institutional Ethical Committee permission was taken for the study. 48 albino mice randomly divided in to 8 groups containing 6 mice in each group. All the text animals were allowed food and water ad libitum both with drawn to prior to experiment.

### Groups

48 albino mice randomly divided in to 8 groups containing 6 mice in each group. 1<sup>st</sup> Group Treated with 5 ml/kg of distilled water orally. 2<sup>nd</sup> Group Treated with standard drug Diclofenac sodium 1mg/kg body weight I.P. 3<sup>rd</sup> Group: Treated with aqueous extract of *Physalis minima* flowers (AEPMF) 100mg/kg body weight orally. 4<sup>th</sup> Group: Treated with AEPMF 200mg/kg orally. 5<sup>th</sup> Group: Treated with AEPMF 400mg/kg orally. 6<sup>th</sup> Group: Treated with 100mg/kg aqueous extract of *Physalis minima* leave (AEPML) orally. 7<sup>th</sup> Group: Treated with 200mg/kg AEPML orally. 8<sup>th</sup> Group: Treated with 400mg/kg AEPML orally. Animals marked with different colors for identification of groups.

### Tail flick method

The tail flick method which is defined by D'amour and Smith 1941 was used for the study. The tail flick method was utilized to study the antinociceptive activity in mice. Basal reaction time of animals to radiant heat was recorded by locating the tip of the tail on radiant heat source. The tail removal from the radiant warmth was taken as end point.

Increased Reaction Time Indicative Of Analgesia. Cut Off Time Of 10 Sec Was Imposed. Test Was Performed Prior To The Drug Administration & 30, 60, 90, 120 Mints After Drug Administration.

### Hot plate method

The hot plate method which was explained by Eddy's and Leimbach was used for the study. The animals which showed paw licking or jump response before 8sec were selected for the study. The hot plate maintained at 55°C. The cut off time for the reaction was 15 sec. The response was determined 30, 60, 90, 120 mts after the administration of their respective treatments.

### Data analysis

Data were analysed by using statistical packages for social science version 23. Results are expressed as

mean  $\pm$  standard error of mean (SEM). Data was analyzed by one way ANOVA (analysis of variance). P value less than 0.01 considered as significant.

## RESULTS

Hot plate method: Pretreatment with different doses i.e.. 100mg/kg body weight, 200 mg/kg body weight, 400 mg/kg body weight of aqueous extract of *Physalis Minima* flowers shown significant analgesic effect when compared with the control group. At the dose of 200mg/kg body weight and 400 mg/ kg body weight showed the most analgesic effect when compared to control group

**Table .1 Effect of physalis minima flowers by hotplate method (p < 0.001)**

Treatment	Basal	30min	60min	90min	120min
Control	5.16 $\pm$ .5	5.5 $\pm$ 0.7	5.8 $\pm$ 0.6	5.8 $\pm$ 0.3	6 $\pm$ 0.5
Standard	5 $\pm$ 0.36	<b>8.8<math>\pm</math>1.0</b>	<b>14.3<math>\pm</math>1.0</b>	16.3 $\pm$ .98	22 $\pm$ 0.8
100mg/kg	5.3 $\pm$ 0.4	<b>8.5<math>\pm</math>1.0</b>	10 $\pm$ 1.1	9 $\pm$ 0.1	5.8 $\pm$ 0.5
200mg/kg	5.16 $\pm$ 0.4	<b>10.5<math>\pm</math>0.4</b>	<b>12.5<math>\pm</math>0.3</b>	9 $\pm$ 0.3	5.6 $\pm$ 0.2
400mg/kg	6.5 $\pm$ 0.3	6.3 $\pm$ 0.3	<b>12.3<math>\pm</math>0.8</b>	10.1 $\pm$ 0.9	7.3 $\pm$ 0.6

Pretreatment with different doses i.e.. 100mg/kg body weight, 200 mg/kg body weight, 400 mg/kg body weight of aqueous extract of *physalis minima* leaves shown significant analgesic effect when

compared with the control group. At the dose of 200mg/kg body weight and 400 mg/ kg body weight showed the most analgesic effect when compared to control group.

**Table 2. : Effect of physalis minima leaves by hotplate method (p<0.001)**

Treatment	Basal	30min	60min	90min	120min
Control	5.16 $\pm$ .3	5.5 $\pm$ 0.3	5.8 $\pm$ 0.3	5.8 $\pm$ 0.3	6 $\pm$ 0.5
Standard	5 $\pm$ 0.36	<b>8.8<math>\pm</math>1.0</b>	<b>14.3<math>\pm</math>1.0</b>	<b>16.3<math>\pm</math>.98</b>	22 $\pm$ 0.8
100mg/kg	4.6 $\pm$ .3	6.3 $\pm$ 0.4	6.6 $\pm$ 0.4	6.8 $\pm$ 0.5	.6.5 $\pm$ 0.3
200mg/kg	6 $\pm$ 0.34	<b>8.8<math>\pm</math>0.7</b>	<b>10.6<math>\pm</math>1.7</b>	<b>13.5<math>\pm</math>1.5</b>	<b>13.5<math>\pm</math>1.8</b>
400mg/kg	6.5 $\pm$ 0.3	<b>8.8<math>\pm</math>0.4</b>	<b>9.8<math>\pm</math>0.4</b>	9.1 $\pm$ 0.7	7.3 $\pm$ 0.6

Tail flick Method: Pretreatment with different doses i.e.. 100mg/kg body weight, 200 mg/kg body weight, 400mg/kg body weight of aqueous extract of *Physalis Minima* flowers shown significant analgesic

effect when compared with the control group. At the dose of 200mg/kg body weight showed the most analgesic effect when compared to control group.

**Table 3.: Effect Of Physalis Minima Flowers By Tail flick Method (p<0.001)**

Treatment	Basal	30min	60min	90min	120min
Control	5.16 $\pm$ .4	5.3 $\pm$ 0.4	5.3 $\pm$ 0.4	5.5 $\pm$ 0.5	6 $\pm$ 0.9
Standard	6.1 $\pm$ 0.3	<b>9<math>\pm</math>0.6</b>	10.8 $\pm$ 1.1	12.3 $\pm$ 0.9	13.6 $\pm$ 0.6

100mg/kg	5.3±0.2	5.6±0.2	6±0.3	7.3±0.2	7.3±0.4
200mg/kg	5±0.3	5.33±0.4	6.8±0.4	<b>8.3±0.3</b>	7.6±0.5
400mg/kg	5±0.3	<b>6.8±0.4</b>	7.5±0.3	7.6±2.2	7.1±1.1

Pretreatment with different doses i.e.. 100mg/kg body weight, 200 mg/kg body weight, 400mg/kg body weight of aqueous extract of Physalis Minima leaves shown significant analgesic effect when

compared with the control group. At the dose of 200mg/kg body weight 400mg/kg body weight and showed the most analgesic effect when compared to control group.

**Table .4: Effect of Physalis minima leaves by tail flick method (p<0.001)**

Treatment	Basal	30min	60min	90min	120min
Control	5.16±.4	5.3±0.4	5.3±0.4	5.5±0.5	6±0.9
Standard	6.1±0.3	9±0.6	<b>10.8±1.1</b>	<b>12.3±0.9</b>	13.6±0.6
100mg/kg	5.6±0.3	6.8±0.54	8.3±0.76	<b>10.3±0.6</b>	8.6±0.3
200mg/kg	6±0.3	7.33±0.4	<b>10.3±1.0</b>	<b>12±0.8</b>	9.6±0.8
400mg/kg	6.1±0.3	7.1±0.59	<b>9.3±0.6</b>	<b>12.1±0.7</b>	9.5±0.4

## DISCUSSION

The present study was undertaken to determine the analgesic activity of the aqueous extract of Physalis Minima flowers & leaves. In our study different doses of leaves & flowers showed a significant analgesic effect compared to that of control group (khan et al). In our study the models we chosen to demonstrate the analgesic activity of aqueous extract of Physalis Minima flowers and leaves both are for central analgesic action. The tail flick is principally for spinal response and the hot plate is predominantly for supra spinal analgesic response.

Pretreatment with different doses i.e.. 100mg/kg body weight, 200 mg/kg body weight, 400 mg/kg body weight of aqueous extract of Physalis Minima flowers shown significant analgesic effect when compared with the control group. At the dose of 200mg/kg body weight and 400 mg/ kg body weight showed the most analgesic effect when compared to control group.

Pretreatment with different doses i.e. 100mg/kg body weight, 200 mg/kg body weight, 400mg/kg body weight of aqueous extract of Physalis Minima leaves shown significant analgesic effect when compared with the control group. At the dose of 200mg/kg body weight 400mg/kg body weight and showed the most analgesic effect when compared to control group.

Comparison between different doses of extracts 200 mg/ kg body weight flowers & leaves showed most analgesic effect when compared with control group. Response of drug does not increased by increasing the dose from 200mg to 400 mg. Comparison between analgesic effect of flowers & leaves – leaves showed more analgesic effect in both tail flick and hot plate methods.

## CONCLUSION

From the results of present study it can be inferred that aqueous extract of Physalis Minima flowers & leaves at all different doses posses analgesic effect.

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