Research Article *Chawda & Pandey, 10(1): Jan., 2019:6010-6012]*
CODEN (USA): IJPLCP ISSN: 0976-7126

INTERNATIONAL JOURNAL OF PHARMACY & LIFE SCIENCES
(Int. J. of Pharm. Life Sci.)

Evaluation of analgesic activity of fruits of *Semecarpus anacardium* Linn.

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Abstract

There are numerous plants which are used in Ayurveda and other traditional system of medicine but their claim is not yet evaluated scientifically in laboratory Animals. Present study was intended to evaluate an analgesic activity of *Semecarpus anacardium* fruits extract in mice to confirm ethnomedical claim made by traditional health healer. Dried fruits of plant were extracted in methanol using Soxhlet extractor. Methanolic extract was evaporated using rota evaporator and stored at cool and dry place. Extract was orally administered in mice (200 & 400 mg/kg bw) and evaluated using hot plate and tail immersion methods. Diclofenac Na (50 mg/kg) was taken as a standard drug. Significant analgesic activity comparable with standard dose of diclofenac Na was observed in both the cases. This confirms ethnomedical claim of some workers regarding analgesic activity of the plant.

Keywords: Analgesic activity, *Semecarpus anacardium*, Diclofenac Sodium

Introduction

Pain is an unpleasant sensation and emotional experience linked to tissue damage. Pain occurs when something hurts, causing an uncomfortable or unpleasant feeling. The presence of pain often means that something is wrong. Each individual is the best judge of his or her own pain. Ways pain can be short term and long term, it can stay in one place or it can spread around the body. Its purpose is to allow the body to react and prevent further tissue damage. We can feel pain when a signal is sent through nerve fibers to the brain for interpretation.[1]

Semecarpus anacardium is a well known medicinal plant in ayurvedic medicine. It is one of the most powerful and fast acting Ayurvedic herbs. The plant belong to family *anacardiaceae* commonly known as marking nut, dhobi nut, bhilawa, biba. It is one of the best, versatile most commonly used herbs as household remedy. It has been used all over India since centuries. It was held in high esteem by ancient sages of Ayurveda. It is a plant well known for its great medicinal value in Ayurveda and is effective in wide range of diseases. It is used extensively in piles, skin diseases, etc. Since it is very hot in potency, it is used only after purification procedures.

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Material and Methods

Selection of plant

The plant was selected based on the traditional claims

Collection, identification and authentication of Plant material

Plant material (fruits) were collected from local market in Indore and authenticated by Dr. S. N. Dwivedi, Professor of Botany, Janata PG College, APS University, Rewa, (M.P.).

Preparation of extracts

Coarsely powdered fruit was extracted using soxhlet apparatus with petroleum ether. After drying, the residue was extracted with methanol and was filtrated. The methanolic solution (filtrate) was evaporated to dryness to get methanolic extract.[3]

Animal

Albino mice, weighing 20-24 gm, were obtained from the animal house of the Department of Pharmacology of the Swami Vivekanand College of Pharmacy, Indore, India. Animals was housed at four per cage allow them, free access to water and food, and was maintained under constant temperature (23±1 0 C) and humidity (60±10%) under 12-h light/dark cycle. Animal treatment and maintenance was conducted accordance to the Principles of Laboratory Animal Care.

Toxicological Studies

Semecarpus anacardium shows toxic effect in the dose more than 2000 mg, so the LD50 of *Semecarpus*

anacardium is found less than 2000 mg according to the OECD guideline 421.[5]

Eddy's hot plate method

The albino mice of either sex divided into 4 groups of 5 animals each. Group I received 0.1ml normal saline (NaCl) orally for seven days as a control group. Group II received 50 mg/kg of Diclofenac Na orally for seven days as a standard drug. Group III received 200 mg/kg methanol extract orally for seven days. Group IV received 400 mg/kg methanol extract orally as test drug for seven days. Pain was induced in all groups by using analgesiometer to mice. Animals were placed on the plate one by one & jumping or paw licking, whichever be the earlier; was taken as a response. Responses were recorded using stop watch and animals failing to show responses in first 12 seconds were rejected from the study. The latency was recorded at 30, 60, 90, 120 & 150 minute intervals for vehicle, standard and test drug administration. [6]

Tail flick method

The albino mice of either sex divided into 4 groups of 5 animals each. Group I received 0.1ml normal saline (NaCl) orally for seven days as a control group. Group II received 50 mg/kg of Diclofenac orally for seven days as a standard drug. Group III received 200 mg/kg methanol extract orally for seven days. Group IV received 400 mg/kg methanol extract orally for seven days. Pain was induced in all groups by using analgesiometer to mice. About 5 cm from the distal end of the tail of each rat was immersed on analgesiometer maintained at 50◦C. The reaction time (in seconds) was the time taken by the rat to flick its tail due to pain. The reaction time was recorded before treatment and 30, 60, 90, 120 & 150 min after the administration of the treatments. The maximum reaction time was fixed at 15 sec to prevent any tail tissue injury. [7]

Statistical analysis

All the data represent mean±S.E.M. values. The data were analyzed by means of analysis of variance (ANOVA). Whenever ANOVA was significant, further multiple comparisons were made using Tukey's test as the post hoc test. All analyses were performed using the SPSS statistical software. The levels of statistical significance ranged from $p<0.05$ to $p<0.001$.

Results and Discussion

The methanolic extract of fruits of *Semecarpus anacardium* Linn. were subjected to evalutaion of analgesic activity by hot plate and tail flick methods. The results are shown in table 1 & 2.

Table 1: Effect of methanolic extract of *Semecarpus anacardium* Linn. fruits on thermal stimuli induced pain in mice using "Eddy's hot plate"

Treatment	Dose	0.5hrs	1hrs	1.5hrs	2hrs	2.5hrs
Control	Normal saline	3.5±1.4	4.6±0.96	4.8±0.03	5.02±0.39	5.9±0.9
SAE	200 mg/kg	6.9±0.81**	7.2±0.2*	7.9±0.83**	8.04±0.7**	10.6±1.42*
SAE	400 mg/kg	7.10±0.6*	7.89±1.70*	8.63±0.63*	10.47±0.34**	12.08±1.04*
Standard	Diclofenac sodium	9.9±0.71*	15.02±1.59**	15.02±1.59**	26.08±0.14*8	29.3±0.6**

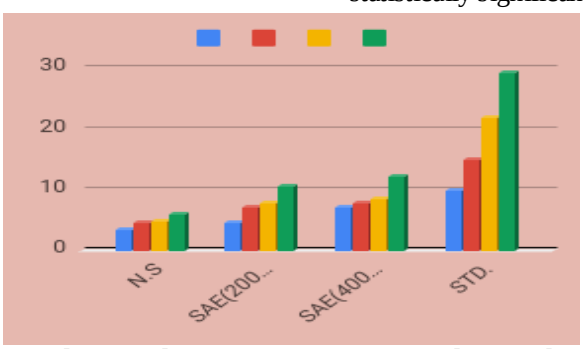
All reading are expressed as mean±S.E.M, Values obtained was compared with Turkeys test and found to be statistically significant* $p<0.05$; **$p<0.001$

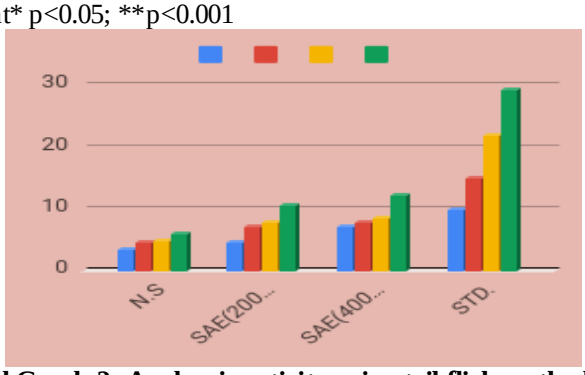
Table 2: Effect of methanolic extract of *Semecarpus anacardium* Linn. fruits on thermal stimuli induced pain in mice using "Tail flick method"

Treatment	Dose	0.5hrs	1hrs	1.5hrs	2hrs	2.5hrs
Control	Normal saline	1.7±0.14	1.81±0.19	2.4±0.14	2.8±0.23	2.92±0.2
SAE	200 mg/kg	2.01±0.18**	2.21±0.93*	2.40±1.4**	3.64±0.73*	4.91±0.5**

SAE	400 mg/kg	2.70±0.5**	3.09±0.1*	4.04±0.17*	4.98±0.34*	5.18±0.1**
Standard	Diclofenac sodium	3.14±0.11*	4.24±0.11**	4.92±0.72**	5.28±0.81*	6.05±0.90**

All reading are expressed as mean±S.E.M, Values obtained was compared with Turkeys test and found to be statistically significant* p<0.05; **p<0.001





Graph 1: Analgesic activity using Hot plate method Graph 2: Analgesic activity using tail flick method

Conclusion

The results of the present study have showed that the methanolic extract of the investigated plant exhibited analgesic activity. This activity may be linked with presence of flavonoids, tannins, saponins, steroids compounds present in the extract. Eddy's hot plate & Tail flick is commonly used as an experimental model of analgesia. In the present study, an attempt has been made to evaluate the analgesic activity *Semecarpus anacardium* using the Eddy's hot plate & Tail flick model. The results of this investigation indicate that the methanolic extract 200 mg/kg and 400 mg/kg has a marked percentage inhibition and as compared to control group.

References

1. Hanoch Kumar K. and Elavarasi P. (2016). Definition of pain and classification of pain disorders, *Journal of Advanced Clinical & Research Insights*, 3, 87–90.
2. Waghmare Anandkumar Rameshrao and Waghaye Ramesh (2016). A critical review on bhallataka: *Semecarpus anacardium* Linn., *IAMJ*, 4:11.
3. Rai Niket, Vyas Savita and Phadnis Pradeep (2013). To evaluate the analgesic activity of *Ficus racemosa* leaf extract in albino mice using eddy's hot plate method. *Asian J Pharm Clin Res*, 6 (5):19-21.
4. Patwardhan B., Saraf M.N. and David S.B. (2013). Toxicity of *Semecarpus anacardium extract*, *Ancient Science of Life*, 8(2): 106-109.
5. Banerjee S., Mukherjee A. and Chatterjee T.K. (2012). Evaluation of analgesic activities of methanolic extract of medicinal plant *Juniperus communis* Linn. *International Journal of Pharmacy and Pharmaceutical Sciences*, 4(5): 16-21.
6. Hijazi Mohamad Ali, El-Mallah ahmed, Aboul-Ela Maha, and Ellakany Abdalla (2017). Evaluation of analgesic activity of *Papaver libanoticum* extract in mice. Hindawi publishing.
7. Veena ME, Niranjana P, Sharanappa P. and Achur Rajeshwara N. (2016). Analgesic activity of *Cryptocarya stocksii* plant by hot plate method, *International Journal of Herbal Medicine*, 4(1): 39-42.

How to cite this article
Chawda N. and Pandey R. (2019). Evaluation of analgesic activity of fruits of *Semecarpus anacardium* Linn.. *Int. J. Pharm. Life Sci.*, 10(1):6010-6012.
Source of Support: Nil; Conflict of Interest: None declared

Received: 02.12.18; Revised: 25.12.18; Accepted: 18.01.19