World Journal of Pharmaceutical and Life Sciences
WJPLS
www.wjpls.org
SJIF Impact Factor: 6.129

IN VIVO NOCICEPTIVE ACTIVITY OF ETHANOL EXTRACTS OF *CARICA PAPAYA* LINN

***Prajapati Sonu, Upadhyay Nikita, Chaturvedi Sonam and Pathan Javed**

Department of Pharmacy, Malwanchal University, Indore, 452020 Madhya Pradesh.

Corresponding Author: Prajapati Sonu
Department of Pharmacy, Malwanchal University, Indore, 452020 Madhya Pradesh.

Article Received on 14/05/2020 **Article Revised on 04/06/2020** **Article Accepted on 24/06/2020**

ABSTRACT

The present study aims to determine antinociceptive activity of ethanol extracts from fruit of carica papaya linn. Tail flick & acetic acid method was used for screening of nociceptive activity against different concentrations of fruit extracts. Ethanol extracts of fruit showed potent anti-nociceptive activity. Ethanolic fruit extracts showed considerable inhibition zone.

KEYWORDS: Carica Papaya, Nociceptive Activity, Pain.

1. INTRODUCTION

No one likes the pain, but it is one of the most important defensive mechanisms in our body, which provide us signal about the abnormality.[1] Due to having adverse side effects, caused by NSAIDs and tolerance and dependence induced by opiates. During this process, efficacy of plant-based drugs used in the traditional medicine have been paid great attention because they are cheap, have little side effects and according to WHO still about 80% of the world population rely mainly on plant-based drugs.[2-3]

2. Experimental Methodology

2.1 Material: The fruits of *Carica Papaya L*. used in the present study were taken from herbal garden, Department of Pharmacy, Malwanchal University, Indore, (M.P). fruits were shade dried and coarsely powdered. Then powdered materials were macerated by ethanol, and continued by ethanol 96% respectively each for three days. The extracts were filtered and concentrated by rotary evaporator. Phytochemical analysis carried out on the dry extract.

2.2 Method: Adult Swiss Albino mice weighing about 20-25 gram were used in this study. The study was approved by the Institutional Ethical Committee, which follows the guidelines of Committee for the Purpose of Control and Supervision of Experimental Animals (CPCSEA). OECD guideline 423 has been followed. Hence 100, 200 mg/kg dose of the extract selected for evaluation of analgesic activity.[4] Data were analysed statistically. Differences among means were considered significant at $P< 0.05$.

Swiss Albino mice divided into Five animals in four groups. The extract of dosage was controlled to be different groups.
Group I: Received Normal saline 10ml/kg, *p.o.*
Group II: Received Aspirin 10mg/kg, *i.p.*
Group III: Received Ethanol extract of *Carica Papaya* L. at the dose of 100mg/kg *p.o.*
Group IV: Received Ethanol extract of *Carica Papaya* L. at the dose of 200mg/kg *p.o.*

3. RESULTS AND DISCUSSION

3.1 Preliminary Phytochemical analysis of the extracts of *Carica Papaya L*. revealed the presence of, Protein, carbohydrates, amino acids, citric acid, malic acids tannin, saponins, alkaloids, glycosides, reducing sugar, phenolic compounds and flavonoids.[5]

S. No.	Phytochemical Test	Methods of Phytochemical Tests	*(Ethanol) Result*
1.	Glycoside	Keller Killani Test Legal test	++
2..	Flavonoids	Lead Acetate Test Sodium Hydroxide Test	++
3.	Alkaloids	Mayer Test Wagner Test	+++
4.	Tannins	Ferric Chloride Test	++
5.	Saponin	Froth Test Foam test	+
6.	Reducing sugar	Fehling Test	++
7.	Carbohydrates	Molisch's Test Benedicts test	++
8.	Protein	Xanthoproteic Test Ninhydrin Test	+++

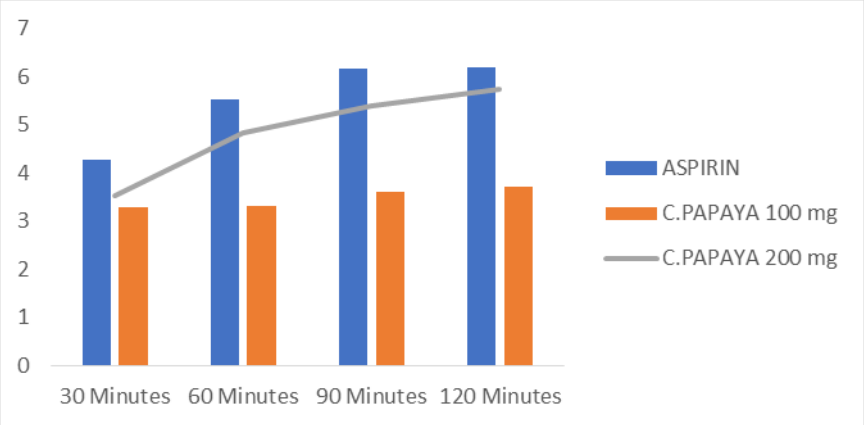
3.1 Thermal Model: Tail Flick Test[6]

The data of the *Carica Papaya* L. on Tail flick test is presented in Table 1. In this method, the extract of the plant showed a dose dependent increase in latency time when compared with control. At 120 minutes. The percent inhibition of two different doses (100 and 200 mg/kg).

Table 1: Effect of Ethanolic Extract of *Carica Papaya* L. by Tail Flick Model.

Treatment Dose mg/kg, *p.o.*	Mean increased reaction time before and after Drug administration (seconds)				
	0 mint.	30 mint.	60 mint.	90 mint.	120 mint.
Normal saline 10 ml/kg	3.01±0.06	3.15±0.10	3.18±0.07	3.21±0.7	3.51±0.7
Aspirin 5 mg/kg	3.24±0.05	4.27±0.08	5.54±0.20	6.17±0.18	6.20±0.15
100 mg/kg	3.31±0.06	3.28±0.06	3.31±0.12	3.61±0.14	3.70±0.09
200 mg/kg	3.14±0.07	3.53±0.14	4.83±0.24	5.40±0.28	5.75±0.18

Results are expressed as mean ± SEM, compared to Control group by one way ANNOVA dunnets t-test. **p < 0.05, is found significant.



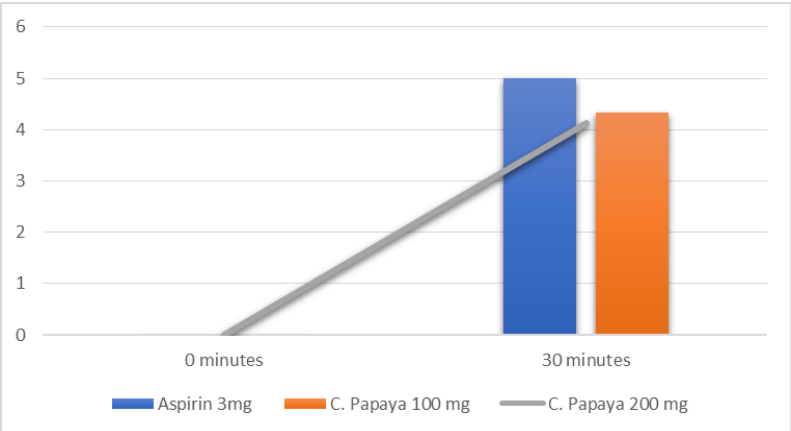
3.2 Chemical Model: Acetic and induced abdominal contraction test

The results of acetic acid induced abdominal contraction are present in Table 2. In this method, *Carica Papaya* L. reduced the abdominal constriction induced by the acetic acid in a dose dependent manner. The standard drug aspirin was found more potent than the plant extract at all of the dose levels.[7-9]

Table 2: Effect of Ethanolic extract of *Carica Papaya* L. on Acetic acid induced (Chemical) Model.

Treatment Dose mg/kg, *p.o.*	Number of abdominal constrictions in 10 mints.	% inhibition of abdominal constriction in 10 mint.
Normal saline10ml/kg	17.00±2.09	----
Aspirin 3 mg/kg	5.00±2.44	70.58
100mg/kg	4.33±2.84	74.52
200mg/kg	4.13±2.10	76.21

Results are expressed as mean ± SEM, compared to Control group by one-way ANNOVA dunnets t-test. **p < 0.05, is found significant.



CONCLUSION

Carica papaya extract may interfered with prostaglandin synthesis and peritoneal receptor to bring about analgesia. The results are indicated that *Carica papaya* extract possessed peripheral mediated analgesic activity. *Carica papaya* fruits showed the best analgesic activity that was comparerable to aspirin. it can be clearly seen that the administration of 100mg/kg & 200mg/kg of the plant extract has more analgesic effects than the standard drug used (Aspirin). The analgesic effect of *carica papaya* fruit extract can be linked to the tannins, phenolic compounds and flavonoids which have been documented to have analgesic effects. Flavonoids were reported to have an analgesic activity by acting on prostaglandin pathway. There is also having a report on the role of tannins in analgesic activity.

REFREENCES

1. Pushpendra K.Patel, Jyoti Sahu, Saket Singh Chandel, A Detailed Review on Nociceptive Models for the Screening of Analgesic Activity in Experimental Animals. *International Journal of Neurologic Physical Therapy*, 2016; 2(6): 44-50.
2. AHM Zulfiker, M Mahbubur Rahman, M Kamal Hossain, K Hamid, MEH Mazumder, M Sohel Rana, In vivo analgesic activity of ethanolic extracts of two medicinal plants - Scoparia dulcis L. and Ficus racemosa Linn, *Biology and Medicine*, 2010; 2(2): 42-48.
3. P. Hasimuna, Suwendara, G.I. Ernasaria, P. Hasimun et al., Analgetic Activity of Papaya (Carica papaya L.) Leaves Extract, *Procedia Chemistry*, 2014; 13: 147-149.
4. Schlede E, Mischke U, Diener W. and Kayser D, The International Validation 161. Study of the Acute-Toxic-Class Method (Oral), *Arch. Toxicol*, 1994; 69: 659-670.
5. Boshra V, Tajul AY, Papaya - An Innovative Raw Material for Food and Pharmaceutical Processing Industry, *Health and the Environment Journal*, 2013; 4[1]: 68.
6. Uma-Devi P, Ganasounder IA, Rao SB, Srivasan KK,In Vitro Radioprotection by *Ocimum flavonoids*, *Survival of Mice. Radiation Research*, 1999; 151: 74–78.
7. Koster R, Anderson M, Debeer EJ, Acetic acid for Analgesic Screening. *Federation Proceedings*, 1959; 18: 412–415.
8. Dambisya YM, Lee S. Influence of Temperature, pH and Naloxone on the Anti-nociceptive Activity of Chana striatus (Haraun) Extract in Mice, *Journal of Ethnopharmacology*, 1999; 66: 181–186.
9. Goyal RK, Handbook of Practical in Pharmacology, B.S. Shah Prakashan Ahmadabad, 2002-2003; 3: 116-117.