Digest Journal of Nanomaterials and Biostructures Vol. 5, No 1, March 2010, p. 229 – 232

PHARMACOLOGICAL SCREENING EFFECT OF ETHANOLIC AND METHANOLIC EXTRACT OF FRUITS OF MEDICINALLY LEAVES

SMITA SHARMA, MUKESH.CHANDRA.SHARMA[a*], D.V.KOHLI[a]
Department of Chemistry Yadhunath Mahavidyalya Bhind (M.P) 477001 India
[a]Department of Pharmaceutical Sciences Dr.H.S.Gour.University Sagar (M.P) 470003 India

The plant *Argemone mexicana Linn.* known as Ghamoya (Family papaveraceae) is an indigenous herb. In the current study ethanolic extract of the leaves of *Argemone mexicana* was evaluated for its peripheral analgesic activity by Acetic-acid induced writhing response in mice, central analgesic by Tail flicking method in mice and Hot plate method in mice. It was found that the ethanolic extract has very good peripheral activity and significant analgesic activity in comparison to the Aspirin. For drug administration to the animals 10mg of drug (*Argemone mexicana*) is taken and dissolved in 100ml of water and 20 mg of drug is taken and dissolved in 100ml of water in this way drug extract (10mg/100gm and 20mg/100gm) injection is prepared and it is injected i.p. to the animals according to their weight. The lethal dose of the drug *Argemone mexicana* was found to be 48.84 mg/100 gm.The aim of the study was to investigate the possible effect of ethanolic extract of whole plant of *Argemone mexicana* on analgesic activity by i.p. The presence of flavanoids in the extract may be contributory to its analgesic activity.

(Received February 28, 2010; accdepted March 15, 2010)

Keywords: Argemone Mexicana L**.,** Anti-Inflammatory Activity, analgesic activity

1. Introduction

The plant *Argemone mexicana Linn*. Known as Ghamoya (Family papaveraceae) is an indigenous herb. It is a perennial herb growing to 0.6m by 0.45m. It is a prickly, glabrous, branching herb with yellow juice and showy yellow flowers. Leaves glaucous, oblong-oblanceolate, pinnately lobed, 1/2-3/4 to midrib, both surfaces sparsely covered with prickles along veins, margins somewhat sinuate-dentate, the teeth tipped with a prickle, sessile, upper ones usually somewhat clasping the stem The plant contains alkaloids as berberine, protopine, sarguinarine, optisine, chelerytherine etc. It is traditionally used as analgesic antispasmodic, antitussive, demulcent, emetic, expectorant, hallucinogenic, purgative, sedative, skin, warts. In the present work we had investigated the possible effect of different doses of ethanolic extract of leaves of *Argemone mexicana* on analgesic activity and it was determined by using Hot plate model and Tail Flicking model and it was founded that ethanolic extract of dose 200mg/kg of *Argemone mexicana* has very good analgesic activity in comparision to the control group[1-2].

2. Experimental

The leaves of plant of *Argemane mexicana* was collected from S.K.Traders Indore (M.P). The plant authenticated by comparing with the herbarium voucher specimen. Plant was collected in the month of October 2009.The leaves of the plant was subjected to washing to remove all dust particles then the leaves was Shade dried and subjected to size reduction by comminution for

* Corresponding author: mukesh2206@rediffmail.com

efficient extraction. About 350 g of the powder was extracted by maceration in the ratio of (1:9) with ethanol for seven days with occasional shaking. Mixture was filtered separately and strained.

3. Pharmacological screening

The models of Eddy's hot plate (techno), tail-flick method and writhing method were used to evaluate the analgesic activity of ethanolic extract of leaves of *argemone mexicana* linn**. [**3-4].

Table 1. Anti-inflammatory activity

Compounds	Average Change in paw volume after 2hours (Mean± SEM)	% Inhibition of paw edema after 3 hours (Mean)	Average Change in paw volume after 5 hours (Mean ± SEM)	% Inhibition of paw edema after 5hours (Mean)
Control	2.86 ± 0.02	3.25 ± 0.02	4.46 ± 0.02	--
01	2.98 ± 0.04**	3.12	4.66 ± 0.02**	7.74
02	2.89 ± 0.02*	3.01	4.63 ± 0.02*	13.65
03	2.74 ± 0.03*	3.00	4.89 ± 0.03*	17.89
Diclophanec sodium	2.90 ± 0.03*	3.31± 0.03*	4.80 ± 0.03*	23.51
One way FANOVA df P	32.53 65,82 <0.001		18.37 31,62 <0.001	
n =6 in each group. *P<0.001, **P<0.01 compared to control. The results were analyzed for statistical significance using one –way ANOVA followed by Dunnet's test. A P value < 0.05 was considered significant.				

4. Writhing method

Pain was induced by injection of irritants (acetic acid) into the peritoneal cavity of mice the animals react with a characteristic stretching behavior, which is called writhing behavior (contraction of abdomen, turning of trunk and extension hind limb). Distilled water (1ml, i.p.) was given to control group (n=6 per group) of mice and the test groups (n=6 per group) received aqueous extract of *Argemone mexicana* at 10 and 20 mg/100gm i.p. and aspirin (as standard) at 25 mg/kg respectively. Aspirin was used as the reference analgesic drug for comparison in this study. One hour following ethanolic extract of *Argemone mexicana*. Aspirin or distill water or acetic acid solution (0.1ml/10 gm, 0.6%) was intraperitoneally injected to each of the mice and five minute allowed to elapse. The number of writhes that occurred within the next 10 minute following acetic acid administration was counted and recorded and result was expressed as percentage inhibition.

5. Tail-flick method

For tail flicking method was performed by taking basal reaction time to radiant heat by placing the tip (last 1-2 cm) of the tail on the radiant heat source. The tail-withdrawal from the heat was taken as the end point. Normally a mouse withdraws its tail within 3-5 sec. A cut off period of 10-12 sec was observed to prevent damage to the tail. Any animal falling to withdraw its tail in 3-5 sec was rejected from the study. Take at least 3-5 basal reaction times for each mouse at a gap of 5 minute to conform normal behavior of the animal. Inject *Argemone mexicana* extract 10 mg/100gm and 20 mg/100g i.p. and the reaction time at 5, 15, 30, 60 minute was noted down.

Table 2. Analgesic Activity

Compound	Pre drug reaction time in sec (Mean ± SEM)	Post drug reaction time in sec. (Mean ± SEM)			
		30 Min. (Mean±SEM)	60 min. (Mean±SEM)	90 min. (Mean±SEM)	180 min. (Mean±SEM)
Control	2.18 ± 0.19	3.15 ± 0.12	4.15 ± 0.11	5.29 ± 0.10	6.33 ± 0.09
01	2.16 ± 0.30*	3.20 ± 0.20	4.03 ± 0.27*	5.43 ± 0.36*	6.86 ± 0.36**
02	2.34 ± 0.04	3.91 ± 0.02**	4.51 ± 0.08*	4.56 ± 0.20*	6.41 ± 0.01*
03	2.24 ± 0.05	3.05 ± 0.06	4.13 ± 0.05*	4.82 ± 0.34*	6.64 ± 0.04*
Tramadol HCl	2.22 ± 0.18	3.35 ± 0.05*	4.37 ± 0.15*	5.44 ± 0.06*	6.49 ± 0.06*
One –way F ANOVA df P	18.75 23.41 P<0.01	32.81 31.69 P<0.001	75.89 16.85 P<0.001	61.01 56.31 P<0.001	
n= 6 in each group.*P<0.001,**P<0.05 compared to control. The results were analyzed for statistical significance using one –way ANOVA followed by Dunnet's test. A P value < 0.05 was considered significant					

6. Eddy's hot plate

The hot plate method was performed and various responses were recorded. The control group of mice (n=6) received only distilled water (1 ml i.p.).The test group mice (n=6 per extract or reference drug-dose) was treated with ethanolic extract of *Argemone mexicana* at 10 and 20 mg/100gm i.p. and aspirin (25 mg/kg i.p.), respectively. One hour following the plant extract or aspirin administration, the mice was separately placed in a glass beaker on Eddy's Hot plate maintained at 55± 0.2 ^{o}C. The latency period was taken as of 20 seconds which is defined as complete analgesia and measurement was terminated if latency period was crossed to avoid injury.

7. Anti-inflammatory activity

Healthy inbred Wister albino rats of either sex, (150-180 g) were selected and housed in polypropylene cages at a well-ventilated, temperature-controlled (30±1^{o}C) animal room with food and water ad libitum. Animals were periodically weighed before and after experiments. Animals were divided in four groups of 6 animals each. The control group receives vehicle orally, while other groups receives test drug and standard drug respectively .The animals were treated with drugs by oral route and subsequently one hour after treatment, 0.1ml of 1% suspension of carageenan in normal saline was injected to the sub planter region of left hind paw to induce edema. The paw volume was measured initially at 1, 3 and 5 hours after carageenan injection using plathismometer .The difference between the initial and subsequent reading gave the actual edema volume which was compared with control. The difference of average values between treated animals and control group is calculated for each time interval and evaluated statistically. The percent inhibition is calculated using the formula as follows- %edema inhibition = [1-(Vt/ Vc)*] 100. Vt and Vc are edema volume in the drug treated and control groups respectively.

8. Conclusion

The analgesic activity and anti-inflammatory activity of leaves of *Argemone mexicana* was found to be more significant at the dose of 200mg/kg and it was found that *Argemone mexicana* has very good analgesic activity in comparision to control group.

References

[1] A. K., Seth “Phamaceutics-II Dispensing and Formulation”, S. Vikas & Co., Page no.268-275.
[2] N. K. Jain, S. N. Sharma, “A text book of professional pharmacy”, Vallabh prakashan, 2001, Page no. 266.
[3] Advances In Pharmacology And Toxicology, “Adv. Pharmacol. Toxicol. **9**(2), 133 (2008)
[4] Kulkarni S.K., “Hand Book of Experimental Pharmacology” Vallabh Prakashan, Page no. 123-127.