International Journal of Pharmacy and Pharmaceutical Sciences

ISSN- 0975-1491 Vol 3, Suppl 2, 2011

Research Article

PHYTO CHEMICAL INVESTIGATION, ANALGESIC AND ANTI INFLAMMATORY ACTIVITY OF *ABUTILON INDICUM* LINN

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Received: 23 Nov 2010, Revised and Accepted: 28 Dec 2010

ABSTRACT

The pharmacological and biological properties and chemical constituents from the plant *Abutilon Indicum* which is widely used in folk medicine. In the present study, the analgesic and anti-inflammatory activity of plant extracts of *Abutilon Indicum* was studied. The analgesic activity was found out by eddy's hot plate method by using standard Pentazocin. The anti-inflammatory activity was found out by Carragenan induced paw edema method by using standard Diclofenac sodium. The anti-inflammatory and analgesic activity of Pet.ether, Chloroform, Ethanol & Aqueous extracts were tested against at a dose level of 400 mg/kg body wt. The anti-inflammatory activity showed *P < 0.001 compared with standard. The analgesic activity showed * P<0.001compared with standard. In both the activity the methanol and aqueous extract have little more activity than the other extracts.

Keywords: *Abutilon Indicum* , Analgesic, Anti inflammatory.

INTRODUCTION

The nature has provided a complete ware house of remedies to cure ailments of mankind. The secrets of Ayuervedha individualizing the healing method were preserved in some parts of India. Many medicinal compounds glycosides, Carbohydrates, proteins and amino acids, Saponins, flavanoids, glycosides phyto sterols, and phenolic compounds are isolated from these plants. Nature is a best friend of our pharmacy field. Natural drugs are effective in action without side effects. This plant "*Abutilon Indicum*" chosen by us is an annual prostrate (or) climbing herb found throughout India. It is annual spreading herb. It is distributed throughout plains and wetlands. All the parts of plant have medicinal uses. In folk medicine the plant is reportedly used in treating fever, cough, lung disease, urine output. They are also used in the treatment of deafness, ringing in the ears, high fever, mumps, cough, pulmonary tuberculosis. The whole herb is used in ayurvedic preparations to treat Hemorrhoids, Diabetes, Menorrhoea[1,2,3,4,5,6]. Leaf extracts of *Abutilon Indicum* shows hypoglycemic activity in rats. But adequate characterization of its analgesic and anti-inflammatory activity has not been yet confirmed. The present study was undertaken for scientific evaluation of analgesic activity using Tail flick Method , Screening for anti-inflammatory activity by carrageenan induced Rat Paw edema in Wister Albino rats.

MATERIALS AND METHODS

The plant "*Abutilon indicum*" was collected in Madurai District in Tamil Nadu during the second week end of November authenticated by Dr, Stephen, Dept. of Botany, The American College, Madurai, Tamilnadu, India. The plants were cleaned thoroughly with running water and dried in shade

Preparation of extracts

The whole plant of "*Abutilon indicum*" was dried in the shade. Then the shade dried plants were powdered to get a coarse powder. About 100 gm of dry powder was extracted first with the petroleum ether (40-60°C) by hot percolation using Soxhlet apparatus. The extractions were continued for 72 hours. The petroleum ether extracts were filtered and concentrated to a dry mass by reduced pressure. A green colour residue was obtained (3.11gms). The marc left after the petroleum ether extract was taken and subsequently extracted with chloroform (2.5 gms). The chloroform extract was filtered and concentrated. Then it extracted with ethanol .A brown residue was obtained (2.9gms).Then the aqueous extract is prepared (2.1 gms). These extracts were used for the study of analgesic and anti-inflammatory activities in rats.

Preliminary phytochemical investigation[7,8,9,10]

The qualitative chemical tests of various extracts of *Abutilon Indicum* was carried out using standard procedure. Carbohydrates, proteins and amino acids, Saponins, flavanoids, glycosides, phyto sterols, and phenolic compounds are present in this plant.(Table 1)

Analgesic activity

Eddy's hot plate method [11,12]

The analgesic activity of the given drug were determined by the basal reaction time. The rats were placed on the analgesiometer maintained at 55ºC. The response produced by the animal like tail withdrawn due to radiant heat by placing the tip (last 1-2cm) of the tail on the radiant heat source are noted which is calculated as the basal reaction. Time duration for the basal reaction response were calculated for standard as, well as test dose treated animals. Animals were divided into 6 groups with six animals in each groups. Group 1 received as control. Group 2 received Pentazocin as positive control. Group 3,4,5,6 received as pet ether, chloroform, aqueous and ethanolic extracts (400 mg/Kg) respectively (Table 2).

Screening of anti-Inflammatory activity

Carragenan induced paw edema method [13,14,15]

Thirty rats were divided into 6 groups of 6 rats each for various treatments .Subsequently 30 min after above treatment, 0.1ml of 1% Carragenan was injected subcutaneously into the planter region of right hind paw to induce edema. The paw volume was measured initially and at 1, 2, 3and 4 h after Carragenan injection using plythesmographic method . Group 1 received as control. Group 2 received Diclofenac sodium as standard. Group 3,4,5,6 received as pet ether, chloroform, aqueous and ethanolic extracts (400 mg/Kg) respectively (Table 3).

Statistical analysis [16]

The data are expressed as mean $\pm$ SEM and students "t" test was performed for the comparison and 'P'<0.001 was taken as significant. For multiple comparison one-way analysis of vehicle was performed.

RESULTS AND DISCUSSION

Preliminary phytochemical investigation

The preliminary phyto chemcial investigation shows the presence of alkaloids, saponins, carbohydrates, steroids, glycosides ,amino acids, flavonoids, phenolic compounds and tannins.

Table 1: Phytochemical investigation of the whole plant extracts of *Abutilon indicum* Linn

Name of the extract	Sugar	Saponins	Flavonoid	Glycosides	Sterol	Phenolc compounds
Petroleumether	+	+	-	-	+	+
Chloroform	+	-	+	+	+	+
Ethanol	+	+	+	+	-	+
Aqueous	+	+	+	+	+	+

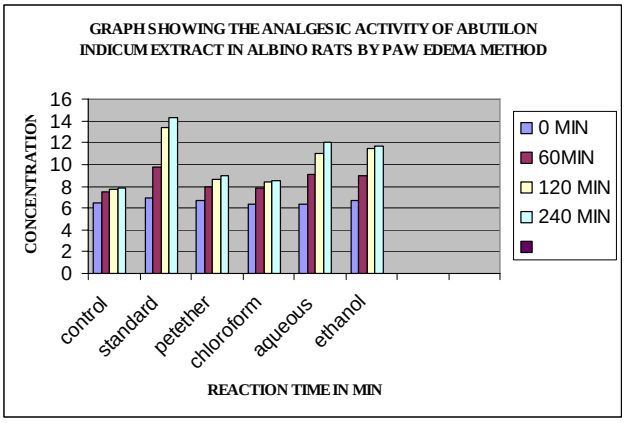
Analgesic studies

Analgesic studies were determined by tail flick method. The methods for investigating analgesic effects of the extracts were selected such that both centrally and peripherally mediated effects were investigated. Hot plate reaction in mice has been found to be suitable for evaluation of centrally. All extracts are subjected to the analgesic studies. The analgesic studies of Petroleum ether, Chloroform, methanol & aqueous extracts were determined by tail flick method at dose level of 400 mg/kg body wt. The dose of various extracts have shown significant analgesic activity P<0.001. The analgesic activity of various extracts when compared positive control pentazocin. The activity was found to be more or less similar. Among the 4 extracts we tested the methanol and the aqueous extract have little more activity than the other 2 extracts.

Table 2: Analgesic activity of various extracts of *Abutilon indicum* in mice hot plate method

Groups	Treatment group	Dose	Time in minutes			
			0 min.	60 min.	120 min.	240 min.
Group I	Control	10ml/kg Normal saline	6.47 ± 0.069	7.49 ± 0.08	7.73 ± 0.11	7.78 ± 0.10
Group II	Standard	Pentazocine 4 mg/kg	6.87 ± 0.04	9.71 ± 0.07	13.4± 0.18	14.32±0.21* [a]
Group III	Pet. Ether extract	400 mg/kg	6.70 ± 0.11	7.95± 0.09	8.67±0.07	8.93±0.06
Group IV	Chloroform extract	400 mg/kg	6.41± 0.06	7.80 ± 0.05	8.38±.0.94.	8.55±0.12
Group V	Aqueous extract	400 mg/kg	6.37±0.06	9.03±0.08	11.01±0.13	12.08±0.24* [a]
Group VI	Ethanol extract	400 mg/kg	6.7±0.12	8.91±0.11	11.5±0.17	11.68±0.16* [a]

* Values are expressed as Mean ± SEM; * Values are found out by using ANOVA followed by Neuman Keul's Multiple range; test ; *[a] Values are significantly different from normal control at (P<0.001)



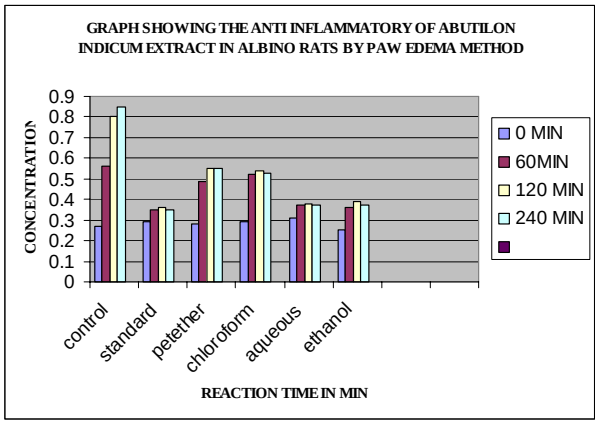
Anti-inflammatory studies

Anti-inflammatory activity were carried out by Carrageenan induced rat paw edema method. All extracts are subjected to the anti-inflammatory studies. The anti-inflammatory activity of Pet.ether, Chloroform, Ethanol & Aqueous extracts were tested against Carrageenan induced rat paw edema method at a dose level of 400 mg/kg body wt. The dose of various extracts have shown significant anti-inflammatory activity P<0.001. The anti-inflammatory activity of various extracts when compared with positive control Diclofenac. The activity was found to be more (or) less similar. Among the 4 extracts tested, the methanol and the aqueous extract have little more activity than the other 2 extracts.

Table 3: Anti inflammatory activity of various extracts of *Abutilon indicum* against Carrageenan induced paw edema in albino rats

Groups	Dose	Treatment	Mean increase in edema ± SEM			
			0 Min	60 Min	120 Min	240 Min
Group I	10ml/kg Normal saline	Normal Control	0.279 ± 0.006	0.568 ± 0.007	0.807 ± 0.004	0.852 ± 0.014
Group II	Diclofenac sodium 10mg/kg	Positive Control	0.290 ± 0.006	0.356 ± 0.009	0.361 ± 0.010	0.358*[a] ± 0.009
Group III	400mg/kg	Pet ether extract	0.288 ± 0.010	0.498 ± 0.009	0.559 ± 0.012	0.550 ± 0.016
Group IV	400mg/kg	Chloroform extract	0.299± 0.010	0.524± 0.007	0.548± 0.010	0.537± 0.013
Group V	400mg/kg	Aqueous extract	0.317± 0.010	0.373± 0.009	0.383± 0.009	0.375± 0.007*[a]
Group VI	400mg/kg	Ethanolic extract	0.25± 0.042	0.366± 0.010	0.394± 0.009	0.370± 0.011*[a]

* Values are expressed as Mean ± SEM; * Values are found out by using ANOVA followed by Neuman Keul's Multiple range test; *[a] Values are significantly different from normal control at (P<0.001)



CONCLUSION

The plant "*Abutilon Indicum*" belong to family Malvaceae was taken for our studies to screen and give a report on analgesic and anti inflammatory studies. The plant is subjected to phyto chemical and colour reaction. This gives the valuable information about the plant for the future workers. On the basis of the results of this study, it is possible to conclude that all the effects observed are true analgesic or anti-inflammatory effects. Three distinct phases are observed during inflammation which are the histamine and serotonin released in the first phase, Kinin and Prostoglandin are released in the second and third phases respectively[17]. Carrageenan induced hind paw oedema in the standard experimental model of acute inflammation. Carrageenan in the phlogistic agent of choice for testing anti-inflammatory drugs as it is not known to be antigenic and is devoid of apparent systemic effects. It seems safe, however to conclude that these parts do possess biological activities following oral administration.

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