



# Journal of Applied Pharmaceutical Science

Available online at [www.japsonline.com](http://www.japsonline.com)

ISSN: 2231-3354  
Received on: 08-10-2011  
Revised on: 11-10-2011  
Accepted on: 17-10-2011

## Short Communication

### The In-vitro Assessment of Antihelminthic profile of Ethanolic Extract of *Atrocarpus hetrophyllus* leaf (Moraceae)

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#### ABSTRACT

The plant *Atrocarpus hetrophyllus* belonging to the family Moraceae is a tropical evergreen plant of its own kind. The plant shows various medicinal properties and its phytochemical analysis shows that it has various phytoconstituents like alkaloids, tannins, fixed oils, proteins, phytosterols, etc. The anthelmintic study was performed using earthworms due to anatomical and physiological similarity with the intestinal roundworms of human beings. The reaction time was noted as paralysis time and death time for all the concentrations and compared with standard albendazole.

**Key words:** Anthelmintic activity, Earthworms, Paralysis time, Death time.

#### INTRODUCTION

The use of traditional medicine is widespread and plants still present a large source of novel active biological compounds with different activities, including anti-inflammatory, anti-cancer, anti-viral, anti-bacterial and cardioprotective activities. This is the era of Competition between Allopathic and Herbal Medicines where, Herbal medicinal products occupy a significant place in consumer consciousness in the developed world and are important in healthcare in most developing countries (Om Prakash et al., 2009). There is increasing interest from the medical and scientific communities in giving them a place in evidence-based medicine, and this is consolidated by a more sympathetic attitude on the part of regulatory authorities than has previously been the case. The *Artocarpus* is widely utilized in traditional medicine systems. The leaves and stem barks have been used to treat anemia, asthma, dermatitis, diarrhea, cough and as an expectorant. The fruits, seeds and trunk wood have been described as containing chemical compounds with aphrodisiac properties. The pulp and seeds are used in fever and as a tonic. Wood is used as sedative in convulsions, leaves are used to activate milk in women and leaf ash is applied to ulcers and wounds (Priyadarshani et al., 2007; Jain et al., 2009). Depending upon the ethanomedicinal research the desired plant was selected for anthelmintic activity.

#### MATERIALS AND METHODS

##### Plant Material

The leaf of the plant *Atrocarpus hetrophyllus* was collected from Sambalpur district Orissa, in the month of may 2010. It was further identified and authenticated by the Botanical Department, Government Womens College, Sambalpur, Orissa. Some voucher specimen numbers

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were submitted to the authority for future references.

### Extraction Procedure

The leaf plant parts were dried in shade and powdered to get a coarse powder. About a significant amount of dry coarse powder was extracted with ethanol (40-60°C) by continuous hot percolation using soxhlet apparatus (Khadse et al., 2010). The ethanol extract was filtered and concentrated to a dry mass by using vacuum distillation. A deep green viscous residue obtained having characteristic odour. Further the solvents were evaporated to dryness.

### Chemicals

The following drugs and chemicals were used. Drugs: Albendazole (BANDY, Mankind Pharma Ltd., New Delhi) all other chemicals were of analytical grade.

### Animals

The anthelmintic experiment was carried as per the method described by Mali et al with minor modifications. The experiment was performed on adult Indian earthworm due to its anatomical and physiological resemblance with the intestinal roundworm parasite of human beings (Khadse et al., 2010; Kosalge et al., 2009). Because of easy availability, earthworms have been used widely for the initial evaluation of anthelmintic compounds invitro.

### Experimental Study of Anthelmintic Activity

50ml of formulation containing three different concentration each of ethanol and water extract (10, 20 & 50mg/ml in distilled water) were prepared and six worms were placed in it. Time for paralysis was noted when no movement of any sort could be observed except when the worms were shaken vigorously. Time for death of worms was recorded after when worms neither moved when shaken vigorously nor when dipped in warm water (50°C). Albendazole (10mg/ml) was used as reference standard while distilled water as control (Raut et al., 2009). The result obtained during the experiments was showed in [Table-1].

**Table-1** Anthelmintic Activity of Ethanolic leaf extract of *Artocarpus heterophyllus* in *Pheretima posthuma*.

Group	Concentration of extract in %	*Time taken in minutes ± SEM	
		Paralysis	Death
Albendazole	1.0	30.66±0.57	42.00±1.57
	2.0	24.00±0.57	37.00±1.57
	5.0	17.33±1.15	28.66±0.91
Ethanol extract	1.0	20±1.76	24±0.88
	2.0	13±0.66	10±0.88
Control	5.0	6±1.52	3±0.33
	-	-	-

### RESULT AND DISCUSSION

The Phytochemical analysis of the plant has stated about the presence of alkaloids, proteins, tannins, flavanoids etc. The ethanomedicinal documentation confirms about the potent activity of the leaf part of *Artocarpus heterophyllus*. From the observations

made, higher concentration of extract produced paralytic effect much earlier and the time to death was shorter for all worms. Ethanolic extract showed anthelmintic activity in dose-dependent manner giving shortest time of paralysis and death with 50 mg/ ml concentration, for all three types of worms. Evaluation of anthelmintic activity was compared with the standard drug albendazole. The activity showed during the experiment may be the result of alkaloids, flavonoids, tannins etc phytoconstituents present in the ethanolic extract.

### CONCLUSION

There are various polyherbal preparations present in the market which contain *Artocarpus heterophyllus* as a chief constituents due to its versatility in treating different disorders. The traditional healers used these plants as potent anthelmintic agent and this have been proved by above experiment. The dietary consumption of this plant not only provides protein carbohydrates and essential amino acids to our body as well as also gives a remarkable taste. The plant is blessed with immense potent activities in combating different types of diseases the requirement is to explore it the most for its active constituents and further more regarding its mode of action and structural analysis so that a better and more advanced formulation can be prepared for the main stream administration of the drug The function of the anthelmintic drugs like Albendazole is to cause paralysis of worms so that they are expelled in the faeces of man and animals. The extracts not only demonstrated this property, they also caused death of the worms, especially at 50 mg/ml as compared with the Albendazole.

### ACKNOWLEDGEMENT

Authors are thankful to the all the members of department of Pharmacognosy, Gayatri College of Pharmacy, Sambalpur, Orissa, for their co-operation during the whole research work. Authors are also thankful to B.B.Mallick, H.O.D, Department of Botany, Government Womens College, Sambalpur, Orissa for authentication and identification of this plant.

### REFERENCES

- A.M. Buddhika Priyadarshani, E.R. Jansz and H. Peiris Studies on the carotenoids of jakfruit (*Artocarpus heterophyllus* Lam.) from Matala and Kurunegala Districts. *J.Natn. Sci. Foundation Sri Lanka*. 2007;35(4): 259-262.
- A.P. Jain, M.V.Tote, N.B.Mahire, V.R.Undale, A.V.Bhosale; Evaluation of Anticonvulsant activity of methanolic extract of *Artocarpus heterophyllus* lam. (Moraceae) in mice; *Journal of Pharmacy Research*. 2009; 2(6): 1004-1007.
- Chandrashekhar D. Khadse, Rajendra B. Kakde; *In vitro* anthelmintic activity of Fenugreek seeds extract against *Pheretima posthuma*. *Int. J. Res. Pharm. Sci*. 2010; 1(3): 267-269.
- Dipak N. Raut, Subodh C. Pal, Subhash C. Mandal. Anthelmintic Potential Of *Dendrophthoe Falcata* Etting.(L.F.) Leaf. *Int J Pharm Res Develop – Online*, 2009;6(2).
- Om Prakash, Rajesh Kumar, Anurag Mishra,Rajiv Gupta. *Artocarpus heterophyllus* (Jackfruit): An Overview. *Phcog Rev*. 2009; 3(6): 353-358.
- Satish b. Kosalge, Ravindra A. Fursule; Investigation of in vitro anthelmintic activity of *Thespesia lampas* (cav.) ;*Asian J Pharm Clin Res*. 2009;2(2):69-71.