



International Journal of Medicine and Pharmaceutical Research

Journal Home Page: www.pharmaresearchlibrary.com/ijmpr



Research Article

Open Access

Investigation of *In-vitro* Anthelmintic Potential of *Pandanus Odoratissimus* Roxb

K. Jyothisna Jayaraju*, N. Bhasker Babu, S. Rubina, R. Mohana Priya,
S. Neelofar Sulthana, SK. Rubina

Dr. K.V. Subba Reddy Institute of Pharmacy, Near Dupadu Railway station, Dupadu, Kurnool, Andhra Pradesh.

ABSTRACT

Pandanus Odoratissimus is the most significant genus in the family *Pandanaceae*, which is commonly known as *Screw pine* (or) *Kewda* in India. This study evaluates anthelmintic activity of methanolic root extract of *Pandanus odoratissimus* on Indian adult earthworms, *Pheretima posthuma* (annelid). Roots were extracted by using soxhlet apparatus. Phytochemical screening of crude extracts showed the presence of tannins, phenolics, flavanoids, terpenoids, steroids and proteins. Various concentrations (25, 50, 100mg/ml) of crude extracts were tested for anthelmintic activity which involved the determination of the time of paralysis and time of death of worms. The activity was compared with standard piperazine citrate. The methanolic extract showed significant activity when compared to the standard piperazine citrate. The paralysis and death time is 48, 27, 17 and 76, 52, 30 minutes respectively at concentrations 25, 50 and 100mg/ml, whereas 32, 19, 11 and 62, 40, 21 minutes respectively for piperazine citrate. In order to confirm the studies *in vivo* studies have to be conducted.

Keywords: *Pandanus odoratissimus*, anthelmintic activity, Piperazine citrate

ARTICLE INFO

CONTENTS

1. Introduction.	61
2. Materials and Methods.	62
3. Results and discussion.	62
4. Conclusion	63
5. Acknowledgement	64
6. References.	64

Article History: Received 24 January 2017, Accepted 18 March 2017, Available Online 10 April 2017

*Corresponding Author

K. Jyothisna Jayaraju
Dr. K.V. Subba Reddy Institute of
Pharmacy, Near Dupadu Railway station,
Dupadu, Kurnool, Andhra Pradesh.
Manuscript ID: IJMPPR3361



PAPER-QR CODE

Citation: K. Jyothisna Jayaraju, et al. Investigation of *In-vitro* Anthelmintic Potential of *Pandanus Odoratissimus* Roxb. *Int. J. Med. Pharm. Res.*, 2017, 5(2): 61-64.

Copyright© 2017 K. Jyothisna Jayaraju, et al. This is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution and reproduction in any medium, provided the original work is properly cited.

1. Introduction

Helminthes infection also known as helminthiasis is among the most omnipresent infection and a chief degenerative International Journal of Medicine and Pharmaceutical Research

disease anguishing a large proportion of world's population. It contributes to the prevalence of malnutrition, anemia,

eosinophilia and pneumonia [1, 2]. Parasitic diseases cause brutal morbidity affecting mainly population in endemic areas⁽³⁾. Synthetic drug management of helminthes combined with advanced methods has been the significant worm control strategy throughout the world. But due to development of resistance in helminthes against conservative anthelmintic drugs is a primary problem in treatment of helminthes diseases. So it is important to look for substitute strategies against helminthes which have led to the suggestion of screening remedial plants for their anthelmintic activity [4].

Pandanus odoratissimus commonly known as Screw pine plant belonging to family *pandanaceae* found in India. It is popularly ornamental plant grows worldwide and well-known for the beauty of its flower which are white in colour with sweet fragrance. In herbal medicine parts of the plants may be used are leaves, roots, male flowers, seeds. Also it is believed to have aphrodisiac properties and reported to be very efficient for treating jaundice, rheumatism, female sterility and for abnormal menstrual bleeding, whereas dried leaves used to facilitate wound healing. Ayurvedic science has found the medicinal action of essential oil yielded by the screwpine's highly scented flowers to be useful in headaches, ear aches and as a liniment for rheumatic pains. It is also prescribed as a stimulant and an antispasmodic agent [5]. Hence, the present investigation aimed to study the anthelmintic property of *Pandanus odoratissimus*.

2. Materials and Methods

Drugs and chemicals:

Piperazine Citrate, Methanol (Merck Pvt. Mumbai) and other chemicals were procured from suppliers.

Collection and Preparation of Plant Material

Pandanus odoratissimus is collected from Prathakota (village), Kurnool (dist), Andhra Pradesh, India. The botanical identification of plant was performed by comparing with standard literature; a voucher specimen (PNO-308-09) is being maintained in the department of pharmacognosy, Dr. K. V. Subba Reddy Institute of Pharmacy, Kurnool. The roots were separated, cleaned, air dried, made free from debris and grounded into powder. The dried powder material was passed through a sieve no.24 and stored in air tight container.

Extraction of the Plant

The shade dried (5 days) *P. odoratissimus* root powder (250 g) was extracted with methanol by using soxhlet apparatus. After extraction, the contents were filtered and concentrated under reduced pressure. The concentrated extract was dried in desiccator and packed in a vacuum sealed container.

Qualitative Phytochemical Screening [6, 7, 8, 9, 10, 11]

The qualitative Phytochemical screening of plant extracts were carried out to detect the various plant constituents.

Preparation of plant extract

The stored dried plant extracts were redissolved at concentrations of 25, 50 and 100mg/ml were suspended in 2% v/v tween 80 in normal saline solution and used for screening the anthelmintic activity. Standard piperazine citrate was used with the same concentrations. All the International Journal of Medicine and Pharmaceutical Research

solvents are freshly prepared before commencement of the experiment.

Animals: Adult Indian earthworms, *Pheretima posthuma* resemble the intestinal round worm parasites of human beings both anatomically and physiologically and hence were used to study the anthelmintic activity. Healthy adult Indian earthworms *Pheretima posthuma* were used for evaluating the anthelmintic activity. All healthy earthworms were of approximately 5-7cms in size and 0.1-0.2 cm in width. They were collected from local place, washed and kept in water until they were used for screening of activity.



Fig 1: Fresh *Pheretima posthuma*

Anthelmintic Activity: The anthelmintic activity was evaluated on adult Indian earthworms by Naga Bharathi *et.al* method. For preliminary evaluation of anthelmintic activity test samples of the extract was prepared at the concentration of 25, 50 and 100 mg/ml in 2% v/v tween 80 in normal saline solution, 6 worms *Pheretima posthuma* of 5-7cm were placed in Petridish containing 30 ml of above test solutions of extracts. Piperazine citrate (25, 50 and 100mg/ml) was used as reference standard and normal saline with Tween 80 (2%) is used as negative control. All the test solutions and standard solutions were prepared freshly before starting the experiment. Observations are made for the time taken for paralysis when movement was lost or no movement. Time for death of worms were recorded after ascertaining that worms neither moved when shaken vigorously nor when dipped in warm water at 50⁰c and fading of color of worms [12].

3. Results and Discussion

Tab 1: Phytochemical screening

Name of phytoconstituents	Methanolic extract
Alkaloids	--
Carbohydrates	++
Amino acids	+
Tannins	+
Steroids	+
Saponins	+++
Flavonoids	++
Glycosides	+
Mucilages	-
Proteins	+

Preliminary phytochemical screening of the methanolic extract of *P. odoratissimus* revealed the presence of tannins, Saponins, Carbohydrates, Amino acids, Flavonoids and Glycosides. Different doses of the extracts were screened for their activity. Their medicinal property may be due to the presence of flavonoids.

Table 2: Anthelmintic activity (Paralysis) of *P. odoratissimus* root extract

Type of extract	Dose (mg/ml)	Time taken (min)
Methanol	25	48
	50	27
	100	17
Piperazine citrate	25	32
	50	19
	100	11
Control	---	---

Table 3: Anthelminthic activity (Death) of *P. odoratissimus* root extract

Type of extract	Dose (mg/ml)	Time taken (min)
Methanol	25	76
	50	52
	100	30
Piperazine citrate	25	62
	50	40
	100	21
Control	---	---



Fig 2: control



Fig 3: 25 mg/ml



Fig 4: 50 mg/ml



Fig 5: 100 mg/ml



Fig 6: Std 100mg/ml

Methanolic extract has significant anthelmintic activity when compared to standard Piperazine citrate. The paralysis time of methanolic extract was 48, 27 and 17 min at 25, 50 and 100 mg/ml concentrations respectively. The death time is 76, 52 and 30 min at 25, 50 and 100 mg/ml. Whereas the values when compared to standard Piperazine citrate is as follows, 32, 19 and 11 min for paralysis and 62, 40 and 21 min for death respectively.

4. Conclusion

The work states that the presence of flavanoids, carbohydrates, glycosides, Tannins, saponins and steroids in the extract of *P. odoratissimus* was responsible for its anthelmintic activity. Methanolic extract has shown significant values with respect to paralysis and death time of earth worms. It is interesting to observe the results of anthelmintic effect of methanolic extract. But further investigations on the isolation of active compounds present in the extracts and *in vivo* studies are necessary to identify a potential chemical entity for clinical use.

5. Acknowledgement

The authors are thankful to Dr. K.V. Subba Reddy institute of pharmacy for providing necessary facility to carry out this work and for financial support.

6. References

- [1] D. Anantha et al., Invitro anti helmentic activity of aqueous and alcoholic extracts of aerva lanata seeds and leaves, *J. Pharmaceutical sciences and research*, 2010, 2 (5), 317-321.
- [2] Choudhury Golak Bihari et al., Phytochemical investigation and screening of anthelmintic activity of leafy extracts of various Ocimum (Tulsi) species, *J.Pharmaceutic*
- [3] Tagbota S, Townson S. Antiparasitic properties of medicinal and other naturally occurring products, *Adv Parasitol* 2001; 50:199-205.
- [4] Sangh Partap^{1*}, Saurabh Kumar¹, Amit Kumar¹, Neeraj K. Sharma¹, K. K. Jha, "In-Vitro Anthelmintic Activity of *Luffa cylindrica* Leaves in Indian Adult Earthworm," *Journal of Pharmacognosy and Phytochemistry*, 2012, 1(2): 27-30
- [5] Prafulla. P. Adkar, V.H. Bhaskar, *Pandanus odoratissimus* (Kewda): A Review on Ethnopharmacology, Phytochemistry, and Nutritional Aspects, *Advances in Pharmacological Sciences*. 2014, 19.
- [6] Kokate C.K, *Practical Pharmacognosy*, 4th edition, (Vallabh Prakashan, New Delhi, India) **1994**, pp 107,112-120
- [7] Khandelwal K.R, *Practical Pharmacognosy Techniques and experiments*, 19th edition, (Nirali Prakashan, Pune, India), March **2008**, pp 143-153.
- [8] Mohammad Ali, *Text Book of Pharmacognosy*, 2nd edition (CBS Publishers & Distributors, New Delhi), **2005**, pp 283.
- [9] Dr. C.K Kokate , A.P Purohit and S.B Gokhale, *Pharmacognosy*, 35th edition , (Nirali Prakashan, Pune, India),**2006**, pp 593-597.
- [10]Dr. S.H Ansari, *Essentials of Pharmacognosy*, (Birla Publications Pvt Ltd, Delhi), **2005-06**, pp 367-68.
- [11]Evans WC, *Trease and Evans Pharmacognosy*, 15th editions (Bailliere TindaL, East Bourne), **2007** pp 193,336.
- [12]Naga Bharathi. M, Sravanthi. V, Sujeeth. S, Kalpana. K, Santhoshi. P, Pavani. M, Rajan Kumar Singh and P. Uma Devi," In-vitro Anthelmintic Activity of Methanolic and Aqueous Extracts of *Achyranthes aspera* linn. (Amaranthaceae) Stems", *Int J Pharma Sci*. 2013, 3(2): 181-184.