



<https://ijrps.com>

ISSN: 0975-7538
Research Article

In vitro* anthelmintic activity of *Annona Reticulata* leaves extract against *Eisinia fetida

Sonal Bhale*, Trupti Tuse, Ganesh Jadhav

Abhinav college of pharmacy, Narhe, Pune - 411041 M.S. India

ABSTRACT

Crude extracts of leaves of *Annona Reticulata* (Annonaceae) were evaluated for in vitro anthelmintic activity on the Indian adult earthworms *Eisinia fetida*. The leaves extracts of *Annona Reticulata* had shown a dose dependant inhibition of spontaneous motility (Paralysis) of earthworms. It has been observed that methanolic extract (100 mg/ml) has shown anthelmintic activity, which was compared with Albendazole as reference drug. Therefore the leaves could be categorized under anthelmintic herbal drugs and could become a potent key ingredient of such herbal formulation.

Keywords: Anthelmintic activity; *Annona Reticulata*; *Eisinia fetida*; Custard apple.

INTRODUCTION

Anthelmintics are those agents that expel parasitic worms (helminthes) from the body, by either stunning or killing them. Helminthes infections are commonly found in community and being recognized as cause of much acute as well as cattle's. More than half of the population of the world suffers from various type of infection and majority of cattle's suffers from worm infections (Chaturvedi et. al. 2009). Intestinal infections with worms can more easily treated than those the infections occurs in other locations in the body, because the worms need to be killed by the drug and the drug need not be absorbed when given by oral route. Because of increasing anthelmintic resistance and impact of conventional anthelmintic on the environment, it is important to look for alternative strategies against gastrointestinal nematodes. Use of herbs could be one of the major options to control these pathologies. Plant *Annona Reticulata* belongs to the family (Annonaceae) and it is popularly known as custard apple (Warrior, 1995). It is native to the area from the Caribbean and Central America and cultivated and naturalized in Southeast Asia, Taiwan, India, Australia and West Africa (Morton 1990). Plant fruits and leaves are used not only as food but also as an ingredient in traditional medicines (Wallis, 2005). The literature survey reveals that seed is used to treat various types of gastrointestinal problems (Bhattachrjee, 2004). It has been mentioned in Ayurveda and Siddha that these plants are

used to treat fever, dysentery and heart diseases, while in Unani system, this plant is used as an aphrodisiac, diuretic, emmenagogue and tonic (Nadkarni, 1982). *Annona Reticulata* has been reported to contain Anonaine, michelalbine, oxoushin sunine, reticuline, dopamine, salsolinol and coclaurine etc. (Trease and Evans 2002, Kalia 2005, Rangari 2004). Therefore an attempt has been made to evaluate anthelmintic activity of leaves on adult earthworm *Eisinia fetida*.

MATERIAL & METHOD

Preparation of extract

The leaves of *Annona reticulata* were collected from Abhinav college of Pharmacy campus and authenticated by Botanical survey of India, Pune. Voucher specimen no. BSI/WRC/Tech/2009/657

Leaves were shade dried and reduced to a very fine powder. Then the powder was subjected to maceration with methanol (60 % v/v) for 48 hrs at room temperature. The extract was concentrated and the solvent was completely removed by evaporation. Extract were freeze dried and stored in the refrigerator until further use.

Anthelmintic activity

Eisinia fetida is commonly known as earthworms due to its anatomical and physiological resemblance with the intestinal roundworm parasites of human being, were collected from soil from nearby area of Abhinav College of pharmacy, Narhe, Pune. Anthelmintic activity was carried out on adult earthworm *Eisinia fetida*. Ten groups were made, each containing six adult earthworms of approximately equal size. The solutions of methanolic extract, Albendazole were made in the concentration of 50, 75 and 100 mg/ml in distilled water. Group of earthworms were released into 10 ml of

* Corresponding Author
Email: bhale.sonal@gmail.com
Contact: +91-9423417444
Received on: 19-07-2011
Revised on: 06-09-2011
Accepted on: 20-09-2011

Table 1: Anthelmintic activity of methanolic extract of *Annona Reticulata* leaves

Treatment	Conc.used in mg/ml	Time taken for paralysis (min)	Time taken for death (min)
Control (Saline water)	----	----	----
Methanolic extracts	50	145.1± 0.13	153.4±0.28
	75	55.37±0.18	60.30±0.06
	100	24.29±0.14	28.41±0.11
Albendazole	50	3.33±0.03	6.45±0.02

desired formulations as made above and one group was treating as control in distilled water. The observation was made for the time taken to cause paralysis and death of individual worms. Paralysis was said to occur when the worms did not move even in distilled water. Death was conducted when the worms lost their motility followed with fading away of their body colors

RESULTS & DISCUSSION

Methanolic extracts were used to evaluate anthelmintic activity has shown dose dependant activity. The mean ± S.d. values (statistical analysis) were calculated for each extract. The result of anthelmintic activity on earthworm *Eisina fetida* was given in table 1, reveal that, the different concentration used for methanolic extracts has shown paralysis and death of earthworms and it was compared in the same concentration with Albendazole as reference standard. Methanolic extract in the concentration of 100 mg/ml has taken less time to cause paralysis (24.29 min) and little more time (28.41 min) to cause death of earthworms as compared with same concentration of reference standard (Table 01). Therefore leaves of this plant could be categorized under anthelmintic herbal drugs and could become a key ingredient of anthelmintic herbal formulation.

CONCLUSION

From the above result it was concluded that methanolic extract of leaves of *Annona Reticulata* have a potent anthelmintic activity when compared with conventionally used drug. It is comparable with standard drug. Further studies using in vivo model are required to find out and to establish effectiveness and pharmacological rational for the use of seeds as anthelmintic drug. Further studies to isolate active constituent from extracts to establish mechanism of action is required.

ACKNOWLEDGEMENT

Authors would like to thanks to Prof. R.D.Patankar, Principal of Abhinav college of Pharmacy, Narhe, Pune for providing the required facilities during this project.

REFERENCES

- A. K. Nadkarni, Indian Materia Medica, Popular Prakashan Pvt. Ltd., Bombay, 1982, pp.1240-1243.
- J. F. Mortan. Mucilaginous plants and their uses in medicine. J. Ethanopharm. 1990, 29: 215-266.

M. Chaturvedi, S. Dwivedi, A. Dwivedi, P. K. Barpete, R. Sachan, Formulation and Evaluation of Polyherbal Anthelmintic Preparation, Ethnobotanical Leaflets 2009, 13:329-331.

P. K. Warrior, V.P.K. Nambiar, Indian Medicinal Plant, Orient Longman, 1995, pp. 131.

S.K.Bhattacharjee, hand book of Medicinal Plants, Pointer Publisher, Jaipur, 2004, pp. 354-355.

T. E. Wallis. Text book of Pharmacognosy, CBS Publication and Distributor New Delhi, 2005, pp.224-225.

Trease and Evans. Pharmacognosy, Elsevier, a Division of Reed Elsevier India Pvt. Ltd, New Delhi, 2002, pp.292-293.

V. D. Rangari. Pharmacognosy and Phytochemistry part-II. Career Publications Nashik. 2003, 87-88.