Research Article
ISSN: 2456-8473
International Journal of Chemistry, Pharmacy & Technology
Vol. 2, No.6, pp-257-259, 2017

IN VITRO ANTHELMINTIC ACTIVITY OF *ABELMOSCHUS ESCULENTUS*

Pallavi Chopra*, Kemin, Reetu Kumar and Himanshu
Apollo College of Pharmacy, Anjora, Durg, Chhattisgarh
Corresponding Author: pallavichopra12@gmail.com
Received 14-05-17; Revised & Accepted: 19-06-17

ABSTRACT

Aqueous and Ethanolic extracts of *Abelmoschus esculentus* were studied for their anthelmintic activity against helminths parasite i.e. *Pheretima posthuma*. Piperazine citrate is used as standard drugs and normal saline water as control. The various concentrations range 25, 50 and 100 mg/ml of each extracts and standard were studied for activity, by examination of time of paralysis and time of death of the worm. Both the extracts exhibited significant anthelmintic activity at highest concentration of 100 mg/ml. The anthelmintic activity of aqueous and ethanolic extracts of *Abelmoschus esculentus* has therefore it been confirmed for the first time and also both extract was showing the presence of flavonoid.

Keywords: **:** *Abelmoschus esculentus*, Piperazine citrate, *Pheretima posthuma*

INTRODUCTION

Helminthiasis is a type of worm infestation, which is one of the most prevalent animal diseases causes serious public health problems in the world. The disease is highly ubiquitous particularly in 3rd world countries due to poor management practices[1].

The gastro-intestinal helminthes is serious type of parasitic problem which are resist to presently available anthelmintic drugs. Hence chemical control of helminthes coupled with improved management has been the important worm control strategy throughout the world[2].

Anthelmintics or antihelminthics are a group of antiparasitic drugs that would expel parasitic worms and other internal parasites from the body by exhibiting their action with either immobilize or killing them without affecting to the host. Although increasing problems of resistance in helminths against anthelmintics have led to the proposal of screening medicinal plants for their beneficial effect. The experiment was conducted on adult Indian earthworm, *Pheretima posthuma* due to similarities of its anatomical and physiology with the intestinal roundworm parasite of human beings [3,4].

Abelmoschus esculentus (A. esculentus), synonyms *Hibiscus esculentus* belonging to family Malvaceae is a flowering plant, native to tropical Africa, and cultivated in throughout India.

The plant is a healthy plant showing wide range medicinal activity such as antidiabetic, anti-fatigue action, antioxidant, anti-hyperlipidemic, and neuroprotective. Such activity mediated due to presence of mediated by various active phyto-constituents such as flavonoids, polyphenols, vitamins, and polysaccharides[5].

Several experiments have been already performed for this plant but plant has not previously examined for anthelmintic activity. Hence our current work was undertaken to evaluate traditional anthelmintic property of *A. esculentus*.

MATERIALS AND METHODS

Plant material

The plant specimens for the proposed study were collected from local area nearby Durg, Chhattisgarh, India during October 2016 and its botanical identity and A Voucher specimen was deposited in Department of Pharmacognosy, ACP, Durg.

Preparation of Extract

The leaf of *A. esculentus* was dried in shade and crushed to produce coarse powder. Now this powder (20gm) was subjected for extraction with distilled water and ethanol (95%) in Soxhlet extractor. The extract was filtered and concentrated which is further evaporated to dryness to obtain aqueous and ethanolic extract and stored at 4º C until used. The percentage yield of aqueous and ethanolic extract was found to 4 percent and 3.2 percent respectively.

Animals

Indian adult earthworms *Pheretima posthuma* collected form moist soil and washed with normal saline to remove all fecal matter were used for the anthelmintic study. The earthworms of 6-8 cm in length and 0.1-0.2 cm in width were used for all experimental protocol due to its anatomical and physiological resemblance with intestinal roundworms parasite of human beings[6].

Drugs and Chemicals

The following drugs and chemicals were used. Drugs: Piperazine citrate (Glaxo Smithkline) Chemicals: ethanol A.R., and saline water. The entire chemical was purchased from local supplier.

Anthelmintic Activity

Aqueous and ethanolic extracts from leaf of *A. esculentus* were examined for their anthelmintic activity using *Pheretima posthuma* model. Three concentrations (20, 50 and 100 mg/ml) of each extract were tested in the bioassay, using two parameters i.e. time of paralysis and time of death of the worms. Here Piperazine citrate was used as standard reference and saline water as control. The anthelmintic assay was carried as per the method of [7] with minor modifications.

In the first set of experiment, four groups of six earthworms were released in to 50 ml of solutions of piperazine citrate, aqueous and ethanolic extracts of whole plant of *A. esculentus* (25, 50 and 100 mg/ml) in distilled water. Extract solutions and standards were freshly prepared before starting the experiment. Observations were made for the time taken to paralysis and death of individual worms. Time for paralysis was noted when no movement of any sort could be observed except when the worms were shaken vigorously. Death indicated the worms lost their motility followed with fading away of their body colors.

RESULTS AND DISCUSSION

Value in the **Table 1** reveals that aqueous and ethanolic extracts of *A. esculentus* showed significant Anthelmintic activity at higher concentrations. Among two extract, the ethanolic extract showed more significant effect on paralyzing the worms, in terms of paralysis time, at every concentration when compared with aqueous extract.

Table 1: Anthelmintic activity of aqueous and ethanolic extracts of leaf of *A. esculentus*

Treatment	Concentration (mg/ml)	Time taken for paralysis (min)	Time taken for death (min)
Control (Normal Saline)	-	-	-
Piperazine citrate (Standard)	25	23±0.3	30±0.4
	50	19±0.3	26±0.8
	100	17±0.4	21±0.7
Aqueous extract	25	62± 0.3	92± 0.7
	50	48±0.4	67±0.3
	100	42±0.1	59±0.9
Ethanolic extract	25	47±0.5	61±0.5
	50	42±0.2	52±0.8
	100	37±0.8	44±0.4

All Values represent Mean± SD; n=6 in each group.
Comparisons made between standard versus treated groups

CONCLUSION

It could be concluded and confirmed that the aqueous and ethanolic extracts of leaf of *A. esculentus* has anthelmintic activity comparable with standard, which is effective against parasitic infections of humans. This activity revealed due to might be presence of flavonoidal phyto-constituent, which will be in pipeline for its quantification.

ACKNOWLEDGEMENT

The authors would like to thanks GSK for gift sample and, Principal, staff and management of ACP for providing necessary facilities and support to carry out this work.

REFERENCES

1. Dhar, D.N., R.L. Sharma and G.C. Bansal. Gastrointestinal nematodes in sheep in Kashmir. Vet. Parasitol.,1982, 11: 271–277
2. Sondhi, S.M., Shahu, R., Magan, A. Indian Drugs, 1994, 31, 317-320.
3. Chatterjee, K.D. 1967. Parasitology, Protozoology and Helminthology. 6th edition. In Guha Ray Sree Saraswaty Press Ltd; Calcutta.
4. Thorn, G.W., Adams, R.D., Braunwald E., Isselbacher K.J. and Petersdorf R.G. 1977. Harrison's Principles of Internal Medicine. McGraw Hill Co; New York.
5. Gemede, H.F., Ratta, N., Haki, G.D., Woldegiorgis, W.Z., Beyene, F. Nutritional quality and health benefits of okra (Abelmoschus esculentus): a review. J Food Process Techno. 2015, 25,16–25
6. Vigar, Z. 1984. Atlas of Medical Parasitology. 2nd edition. P.G. Publication House, Singapore. pp. 216-217.
7. Ajaiyeoba, E.O., Onocha, P.A. and Olarenwaju, O.T. In vitro anthelmintic properties of Buchholzia coriaceae and Gynandropsis gynandra extract. Pharm. Biol., 2001, 39,217-220.