



ANTHELMINTIC ACTIVITY OF LEAVES AND SEED EXTRACTS OF ABELMOSCHUS MOSCHATUS MEDIK

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ABSTRACT

Abelmoschus moschatus Medik. commonly known as Musk mallow (E) and Kasturi bhendi (Hindi) is an aromatic and medicinal plant belongs to Malvaceae family. The plant has numerous medicinal values as claimed by traditional and folk lore. The present paper deals with anthelmintic activity in adult earthworm *Pheretima posthuma*. The PEE, CE, EE and AE leaves and seed extract of *Abelmoschus moschatus* Medik. was screened for anthelmintic activity and it was found that the aqueous extract showed higher activity than other aqueous extract when compared with the standard drug of albendazole.

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INTRODUCTION

Abelmoschus moschatus Medik. is an aromatic and medicinal plant in the Malvaceae family, which is native to India. The plant is used in the treatment of various diseases as described in traditional and folk remedies. Every part of this medicinal plant is used in one or the other way¹⁻². Seeds are effective aphrodisiac and antispasmodic, and used in tonics. Also useful in treating intestinal disorders, urinary discharge, nervous disorders, hysteria, skin diseases etc. In India, roots, leaves (rarely), and seeds of ambrette are considered valuable traditional medicines. The bitter, sweet, acrid, aromatic seeds are used as a tonic and are considered cooling, aphrodisiac, ophthalmic, cardiogenic, digestive, stomachic, constipating, carminative, pectoral, diuretic, stimulant, antispasmodic, deodorant, and effective against kapha and vata, intestinal complaints, stomatitis; and diseases of the heart³⁻⁵. The plant has wide therapeutic efficacy but so far, no any systematic studies has been carried out to reveal the anthelmintic activity. Therefore, the present work was conceived to determine the anthelmintic activity of PEE, CE, EE and AE of leaves and seed extract of *Abelmoschus moschatus* Medik.

MATERIAL AND METHODS

Selection and Collection of Plant Material

Abelmoschus moschatus Medik. (Kasturi bhendi) belongs to family Malvaceae is oil yielding and medicinally important

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plant, commonly found wild in some parts of our country, till yet no any systematic studies has been carried out in evaluating the species as concerned to development of standardization parameters and pharmacological screening, therefore, the plant was selected for present investigation.

Authentication of Plant/Plant Material

The seeds of the selected plant were collected in the months of July 2015 from the Jawahar Lal Nehru Krishi Vishwavidyalaya (JNKVV) Agriculture University, Jabalpur, M.P. and identified & authenticated by Dr. Santosh Agnihotri, Professor, Department of Botany, Govt. Model Science College, A.P.S. University, Rewa, M.P. and was deposited in our Laboratory, Voucher specimen No. PCog/AM/175. The seeds was then sown in soil, irrigated regularly and after 3-4 months various part of the plants i.e., root, stem, leaves, flowers, fruits and seeds were collected, dried under shade, powdered and stored in an air-tight container for further use.

Anthelmintic Activity⁶⁻⁸

Selection and Collection of Earthworm

For the anthelmintic activity, Indian adult earthworms (*Pheretima posthuma*) 6 cm in length and 0.1-0.1-2 cm in width were used. The earthworms were collected from College of Agriculture, Indore, (M.P.) due to their anatomical and physiological resemblance with the intestinal roundworm parasites of human being - from moist soil and washed out of sand.

Sample Preparation

100 mg of extract was weighed accurately and was dissolved in 1% gum acacia in normal saline. The concentration of stock solution is 1000 µg/ml. From the above stock solution 10, 7.5, 5 and 2.5 ml were dissolved in 100 ml separately to produce 100, 75, 50 and 25 µg/ml.

Standard Preparation

100 mg of standard drug (Albendazole) was weighed accurately and was dissolved in 1% gum acacia in normal saline. The concentration of stock solution is 1000 µg/ml. From the above stock solution 10, 7.5, 5 and 2.5 ml were dissolved in 100 ml separately to produce 100, 75, 50 and 25 µg/ml.

Anthelmintic Investigation

The earthworms were divided in 6 groups and 4 sub-divided groups of six earthworms in each group having uniform size. Group I was control and treated with distilled water, Group II served as standard drug albendazole while Group III to VI was treated with different concentrations of Pet. Ether, Chloroform, ethanolic and aqueous extract of *Abelmoschus moschatus* Medik. Observation were made for time taken to paralyze; paralysis was said to occur when earthworms did not revive in normal saline and shows no motility and death, death was concluded when earthworms lost their motility and followed by their body colors fading away.

Statistical Analysis

All the values were statistically analyzed by one-way analysis of variance (ANOVA) followed by Student t- test. Comparison between standard and drug treated groups were considered to be significant (*P<0.0001). All values are expressed as mean ± SEM.

RESULTS AND CONCLUSION

Gastrointestinal parasites create a serious threat to the production of livestock in developing nations. Despite the fact of development of anthelmintic resistance in parasites of high economic significance, chemotherapy is still the most widely used option for the control of helminthes. Helminthes parasite infections are global problems with serious social and economic repercussions in the Third World countries. The diseases affect the health status of a large fraction of the human population as well as animals. Some types of dangerous helminthes infections like filariasis have only a few therapeutic modalities at present. The continuous and long-term reliance on a small range of compounds has led to the development of drug resistance in many helminthic strains. In addition, after treatment with albendazole or mebendazole, several side effects have been reported in hosts such as gastrointestinal symptoms (epigastric pain, diarrhea, nausea, vomiting), nervous system symptoms (headache, dizziness), and allergic phenomena (edema, rashes, urticaria). Some anthelmintic drugs, such as praziquantel and albendazole, are contraindicated for certain groups of patients like pregnant and lactating woman. These drugs have also to be used with caution in hepatitis patients and in children below 2 years of age. Keeping all these aspects in mind the search of natural anthelmintic is essential⁶⁻⁸.

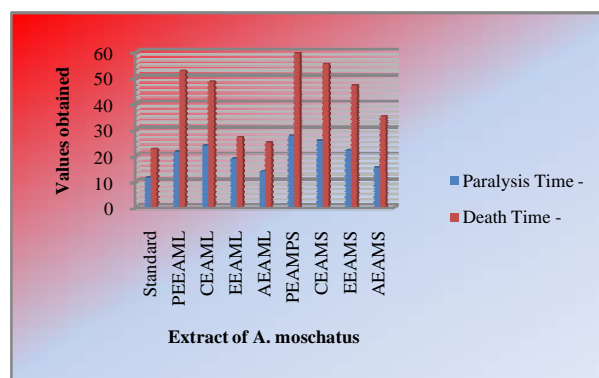
The taxa of *Abelmoschus* is an indigenous and medicinal plant grown under cultivation in some parts of our country and was

chosen for the present investigation. The scanty availability of information on this plant facilitates the study on it. The attempt was made to study *in vitro* anthelmintic activity of various seeds and leaves extract of *Abelmoschus moschatus* Medik. The anthelmintic activities of the seeds and leaves extract (100 µg/ml) was determined and were reported and found to be significant when compared with the standard drug (Table 1 & Graph 1). The anthelmintic activities were determined and it was found that Leaves extract possesses higher activity than seeds extract and found to be significant when compared with the standard drug.

Table 1 Anthelmintic activity of leaves and seeds extract of *Abelmoschus moschatus* Medik

S/No.	Treatment	Paralysis Time	Death Time
1.	Control	-	-
2.	Standard	11.29±0.22	22.38±0.33
3.	PEEAML	21.33±0.28	52.55±0.20
4.	CEAML	23.66±0.20	48.16±0.18
5.	EEAML	18.66±0.29	26.89±0.27
6.	AEAML	13.66±0.20	24.89±0.29
7.	PEAMPS	27.41±0.26	59.29±0.31
8.	CEAMS	25.69±0.27	55.21±0.19
9.	EEAMS	21.86±0.39	46.99±0.37
10.	AEAMS	15.26±0.23	34.91±0.21

Values are expressed as X (Mean) ± SEM, n=6. (One way ANOVA followed by Student t-test). Statistically significance of P<0.001 in comparison to standard.



Graph 1 Comparative Paralysis and Death time of of leaves and seeds extract of *Abelmoschus moschatus* Medik

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