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ANTHELMINTIC ACTIVITY OF LEAVES OF *MIMOSA PUDICA*

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ABSTRACT

Keywords:

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Albendazole

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Helminthes parasite infections are global problems with serious social and economic repercussion in third world countries. The disease affects the health status of large fraction of the human population as well as animals. The *Mimosa pudica* is commonly known as SHY PLANT. The all parts of plant being used from the period of Sushruta as acrid, analgesic, antipyretic, antimicrobial. immunomodulatory effect and in wide verity disease. The present study was undertaken to evaluate anthelmintic activity of different extracts of seeds of *Mimosa pudica* belonging to family *mimosaceae*. The different successive extracts namely petroleum ether, ethanol and water using *Pheretima posthuma* as a test worm to the different concentrations (100, 200, 500mg/kg) were tested for bioassay which involved determination of paralysis and time of death of the worms. Albendazole was included as standard reference and normal saline as control. The result of present study indicated that the crude alcoholic extract and aqueous extracts significantly demonstrated paralysis and also caused death of worms in dose dependent manner as compared to standard reference albendazole. While pet. ether extracts shows weak anthelmintic effect compared to standard, ethanol and aqueous extracts. Further studies are in process to isolate the active principles responsible for the activity.

INTRODUCTION

Helminth infection is among the most common infections in man; in developing countries they pose a large threat to public. The continuous and long term reliance on a small range of compound led to the development of drug resistance in many helminthic strains¹. In addition, after treatment with albendazole or mebendazole, several side effects such as gastrointestinal symptom. These drugs have also to be used with caution in hepatitis patients and in children below 2 years of age.²*Mimosa pudica* Linn known as sensitive plant in English and lajvanthi or chuimui in local Hindi language. The plant is distributed throughout in India in moist locality. A diffuse prickly under shrub, 45 - 90 cm in height. Leaves bipinnately compound, pinnate 2-4, digitately arranged with 10 -20 pairs of leaflets, rachis clothed with ascending bristles. Flowers pink, in globose heads, peduncles prickly, usually in auxiliary pairs all along the branches. Fruits bristly pods, flat, straw coloured, consisting of 3-5 one – seeded segments. The roots and leaves are commonly used in treatment. The roots are bitter, astringent, acrid, cooling vulnerary, alexipharmic, resolvent, diuretic, antispasmodic, emetic, constipating, and febrifuge.³*Mimosa pudica* suggest various therapeutic use of plant reported such as urolithiasis³, ovulation⁴, vibriocidal⁵, antidepressant⁶, estrogenic and antiestrogenic activities⁷, anti implantation and antiestrogenic activity⁸, effects on oestrous cycle and ovulation⁹, hyperglycemic¹⁰, anticonvulsant activity¹¹, hyaluronidase and protease activities¹².

MATERIALS AND METHODS

Plant material

The plant was collected from near Solapur district, Maharashtra in month of August and authenticated by approved botanist. After authentication, fresh leaves material was collected, cleaned & shade dried.

Extract preparation¹³

The leaves were pulverized by mechanical grinder & passed through a 20 – mesh sieve. The powdered leaves (500 gm) were extracted successively with petroleum ether and ethanol extract by using a soxhlet apparatus and water extracted by a cold maceration.

The extracts were filtered through a cotton plug, followed by whatman filter paper (no.1).The extracts were evaporated under reduced pressure using a rotovac evaporator at a low temperature at 40°C-50°C until all the solvent had been removed to gave extract sample then weight of each residue was recorded.

Worm Collection

Indian earthworm's *Pheretima posthuma*¹⁴ were used to study anthelmintic activity. The earthworms were collected from the moist soil from near region of Pandharpur, Solapur and washed with water. Indian earthworm *Pherethia posthuma* in 3-5 cm in length and 0.1-2 cm in width were used due to its anatomical and physiological resemblance with the intestinal roundworm parasite of human beings.

ASSAY

The anthelmintic activity of *Mimosa pudica* leaves studied on adult Indian earthworm *Pherethia posthuma* in 3-5 cm in length and 0.1-2 cm in width were used due to its anatomical and physiological resemblance with the intestinal roundworm parasite of human beings. The anthelmintic assay was carried out as per the method of Nargud with minor modification. 100 mg/ml, 200 mg/ml and 500 mg/ml dilutions of petroleum ether extract, ethanol extract and aqueous extract were prepared. Normal saline served as control. All dilutions of test, standard, and control were placed in each of the petridishes. Six earthworm of nearly equal size were placed in each of the petridishes at room temperature All the earthworms were washed into normal saline solution. Observations were made for time taken to paralyze (paralysis was said to occur earthworms didn't revive in normal saline) and death (death was conducted when earthworms lost their motility and followed by their body colors fading away). All the results were expressed as a mean \pm SEM of six earthworms in each group.

RESULT AND DISCUSSION:**Table 1: Anthelmintic Activity of Different Extracts of *Mimosa pudica***

Sr.No	Test Substances	mg/ml Concentration	Time taken for paralysis(min) ±SEM	Time taken for death(min) ±SEM
1.	Control (Normal saline)	-	-	-
2.	Albendazole(Standard)	100	4.6 ±0.50	11.0 ±0.37
		200	3.2±0.37	7.0±0.37
		500	2.0±0.31	6.0±0.37
3.	Petroleum ether extract	100	14.8 ±0.37*	32.0±0.37*
		200	10.2±0.37*	12. 0±0.70*
		500	6.8±0.37*	15.00±0.37*
4.	Ethanol extract	100	8.2±0.37*	17.04 ±0.24*
		200	5.6±0.37*	10.00 ±0.37*
		500	2.8±0.37*	7.00±0.37*
5	Aqueous extract	100	12.0±0.70*	25.00 ±0.37*
		200	8.8±0.58*	19.00±0.37*
		500	7.4±0.24*	14.00±0.44*

*P<0.05 when compared to standard. Values are expressed as mean± SEM

The results of anthelmintic activity are shown in table no.01. In the present study it was observed that all the extracts have shown positive response to certain degree of anthelmintic activity. Whereas ethanol extract of plant shown significant activity as compared to standard.

CONCLUSION

On the basis of present results and available reports, *Mimosa Pudica* as a powerful anthelmintic has been confirmed and ethanolic extract displayed profound anthelmintic activity in study. The drug can be further exposed for the isolation and characterizations of the active constituents responsible for anthelmintic activity.

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