



NOTE

Screening of the Anthelmintic Activity of Leaves of *Mikania scandens* L.

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The anthelmintic activities of different extracts of leaves of *Mikania scandens* L. were evaluated separately on adult Indian earthworm (*Pheritima posthuma*). It was found that ethanol extract of *M. scandens* (EEMS) showed significant anthelmintic activities at the concentration of 10 mg/mL. Again, the anthelmintic effects of petroleum ether extract of *M. scandens* (PEMS), ethyl acetate extract of *M. scandens* (EAMS) and aqueous extract of *M. scandens* (AEMS) at 15 and 25 mg/mL concentrations are comparable with that of the effects produced by the reference standards, albendazole (10 mg/mL) and piperazine citrate (10 mg/mL).

Key Words: *Mikania scandens*, Albendazole, Anthelmintic activity, Piperazine citrate, Indian earthworm.

Helminthic infections are now being recognized as cause of much chronic ill health and sluggishness amongst the tropical people. More than half of the population in the world suffers from worm infection of one or other. Helminthic also affect the domestic animals and livestock causing considerable economic losses. Traditional system of medicine reports the efficacy of several natural products eliminating Helminthic. Keeping this in mind, the present communication deals with the evaluation of anthelmintic activities of leaves of *Mikania scandens* L.

Mikania scandens L. (English: climbing hempvine, climbing hempweed; Bengali: tara lata, Banchalaur; family: asteraceae) a wild, a twining herb with long petiole, opposite leaves and small homogamous flower-heads grows as weed in all areas in India and Bangladesh¹. It is used sometimes by men as vegetables. The plant is a good source of vitamin A, C, B and other active compounds like mikanin, sesquiterpenes, betasitosterin, stigmasterol, friedelin^{2,3}. Various parts of this plant have been used in tribal medicine to treat stomach ulcers, gastric problems, inflammation, microbial infections and carcinogenic manifestations. The plant is also reported in traditional medicine to have psychopharmacological effects^{4,5}.

On literature survey, it was found that no detailed study has yet been done regarding the anthelmintic property of leaves of *M. scandens*. On preliminary testing, it was found that petroleum ether, ethyl acetate, ethanol and aqueous extract of leaves *M. scandens* (PEMS, EAMS, EEMS and AEMS, respectively) showed considerable anthelmintic activity compared to other extracts of this plant. Hence, in the present

study, we have evaluated the anthelmintic activities of PEMS, EAMS, EEMS and AEMS to substantiate the folklore claims.

The aerial parts of *M. scandens* were collected during the months of June from Panua, Bankura district of West Bengal and were authenticated by Dr H.J. Chowdhury, Joint Director, Central National Herbarium, Botanical Survey of India, Howrah, West Bengal. The voucher specimen has been preserved in our laboratory for further reference (DM1). After collection, plant parts were washed properly and fungal infected parts were discarded.

Preparation of plant extract: Shade-dried, powdered, sieved (40 mesh size) plant materials were extracted in succession with petroleum ether (60-80 °C), ethyl acetate, ethanol and water. The extracts were evaporated to dryness. The trace amount of solvents, which may be present within the solid mass of respective extracts, was removed under vacuum. On preliminary phytochemical analysis, *M. scandens* showed positive tests for flavonoid, saponin, steroid, tannin and alkaloid⁶⁻⁹.

Evaluation of anthelmintic activity: Anthelmintic activities were evaluated for each extract separately. The activities were tested according to method described in detail by Kailashraj and Kurup¹⁰. *Pheritima posthuma* (earth worm obtained from horticulture department) of nearly equal size (8 ± 1 cm) were selected for present study due to its anatomical and physiological resemblance with the intestinal roundworm parasites of human beings^{11,12}.

Each group was treated with one of the following: vehicle (3 % Tween 80 in normal saline), Piperazine citrate (15 mg/mL),

albendazole (10 mg/mL) and extracts (5 and 10 mg/mL) in normal saline containing 3 % Tween 80. Observations were made for the time taken to paralyze and/or death of individual worm up to 4 h of test period. Paralysis was said to occur when the worms did not revive even in normal saline. Death was concluded when the worms lost their motility followed with fading away of their body colour^{13,14}.

The anthelmintic activities^{15,16} of the title compounds on *Pheretima posthuma* is exhibited in Table-1 and Fig. 1. The perusal of the data reveals that EEMS showed potent anthelmintic activities at 10 mg/mL concentration. However, the anthelmintic effects of PEMS, EAMS and AEMS at 15 and 25 mg/mL concentrations are comparable with that of the effects produced by the reference standards albendazole (10 mg/mL) and piperazine citrate (10 mg/mL). The activities were found in a dose dependent manner. Potency of the extracts was found to be inversely proportional to the time taken for paralysis/death of the worms.

TABLE-1
ANTHELMINTIC ACTIVITIES OF DIFFERENT
EXTRACTS OF *MIKANIA SCANDENS* L.

Treatment with dose	Time taken for paralysis (min)	Time taken for death (min)
1 % gum acacia in saline Solution (control)	-	-
Albendazole (10 mg/mL) (standard)	37.2 ± 1.2	65.5 ± 0.87
Piperazine citrate (standard) (10 mg/mL)	21.58 ± 0.32	138.51 ± 3.10
Pet ether extract (PEMS)		
10mg/mL	62.2 ± 2.2	118.3 ± 0.79
15mg/mL	29.4 ± 0.27	56.5 ± 2.28
25mg/mL	27.2 ± 0.38	54.6 ± 0.91
Ethyl acetate extract (EAMS)		
10mg/mL	40.3 ± 0.81	70.5 ± 0.32
15mg/mL	30.75 ± 0.76	62.37 ± 0.93
25mg/mL	25.05 ± 0.43	56.37 ± 0.36
Ethanol extract (EEMS)		
10mg/mL	25.2 ± 1.82	36.5 ± 2.4
15mg/mL	15.12 ± 1.6	28.14 ± 1.38
25mg/mL	13.18 ± 1.41	25.75 ± 1.37
Aqueous extract (AEMS)		
10mg/mL	56.2 ± 0.21	135 ± 0.73
15mg/mL	27.16 ± 0.87	69.33 ± 0.76
25mg/mL	26.3 ± 0.81	67.23 ± 0.47
Results are expressed as mean ± SEM from six observations		

Preliminary phytochemical screening exhibited the presence of saponin, tannin, flavonoid in the ethanol extract of *M. scandens* (EEMS). The excellent antioxidant activity of EEMS

may be due to the presence of one or more of these compounds. However, further studies are needed to establish it.



Fig. 1. Indian earthworms treated with different extracts and standard (from left): PEMS, EAMS, EEMS, AEMS, albendazole, saline control respectively

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