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Anthelmintic potential of ethanolic extract of *Lantana camara* linn flowers

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Abstract

Objective: The ethanolic extract the flowers of *Lantana camara* Linn were screened for anthelmintic activity using earthworms *Pheretima posthuma*.

Methods: Various concentrations of plant extract were tested in the bioassay. Albendazole (20 mg/ml) was used as reference standard drug whereas distilled water as control. The parameters like the time of paralysis and the time of death were determined by using the ethanolic extract the flowers of *L. camara* at the concentrations of 250 and 500 mg/ml.

Results: Extract exhibited significant anthelmintic activity at highest concentration of 500 mg/ml. The results of the study show that ethanolic extract of flowers of *L. camara* Linn possesses significant anthelmintic activity at a dose of 500 mg/ml when compared to standard drug albendazole at 20mg/ml concentration.

Conclusion: Ethanolic extract of flowers of *L. camara* at a dose of 500 mg/ml possesses vermicidal activity and found to be effective as an anthelmintic.

Keywords: Anthelmintic activity, *Lantana camara* Linn, *Pheretima posthuma,* Ethanolic extract.

Helminthic infections continue to be the major health hazard to the people, especially those living in tropical developing countries. Although these infections do not cause significant morbidity and mortality when compared with many other parasitic infections, they do cause substantial, but often less measurable effects. For example, infections with gastrointestinal helminths often lead to malabsorbtion, diarrhoea, anaemia and other states of poor health, particularly in infants and school-age children. Though there are several synthetic anthelmintics available at the present time against these parasites, the fact remains that a large proportion of the world's population still does not have access to, or cannot afford to pay for modern medicines, particularly in remote rural areas in poor countries. Besides, the continued usage of current anthelmintic drugs is also posing a major problem of drug resistance in several parasite species. Approximately 300 million people suffer severe morbidity associated with these parasites and half of which are school-going children affected by massive infections. Parasitic helminthes affect human being and animals by causing considerable hardship and stunted growth. Most diseases caused by helminthes are of a chronic and debilitating in nature [1-2].

Lantana camara Linn is a flowering ornamental plant belonging to family Verbenaceae. *L. camara* is also known as Lantana, wild sage, Surinam tea plant, Spanish flag and West Indian lantana. *L. camara* is a well known medicinal plant in traditional medicinal system and recent scientific studies have emphasized the possible use of *L. camara* in modern medicine [3, 4].

Phytochemical composition of the *L. camara* has been extensively studied in last few decades. Different parts of *L. camara* are reported to possess essential oils, phenolic compounds, flavonoids, carbohydrates, proteins, alkaloids, glycosides, iridoid glycosides, phenyl ethanoid, oligosaccharides, quinine, saponins, steroids, triterpens, sesquiterpenoides and tannin as major phytochemical groups [5, 6].

The present study was aimed to investigate the anthelmintic potential of ethanolic extract of flowers of L. camara Linn.

Fresh flowers of *L. camara* were collected from botanical garden of Modern Institute of Pharmaceutical Sciences, Indore. The plant was authenticated by department of pharmacognosy, MIPS, Indore. The flowers of *L. camara* were chopped, weighed and air-dried until 20% of moisture content is left.

Albendazole suspension [Zentel, GSK Pharmaceuticals Ltd. Bangalore], Ethanol [changshuyangyuan chemical china], were used during the experimental protocol. All the chemicals used are laboratory and analytical grade. *Pheretima posthuma* (Annelida) were collected from the water logged areas of soil in Indore.

Flowers of *L. camara* Linn were collected and shade dried. The powdered plant material was extracted by maceration for 72 h using ethanol as solvent. The extract was dried at low

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temperature under reduced pressure and stored in well closed container.

The anthelmintic activity was performed according to the standard protocol on adult Indian earth worm *Pheretima posthuma* as it has anatomical and physiological resemblance with the intestinal round worm parasites of human beings. Four groups were prepared, first one was considered as control, second contained albendazole (20 mg/ml) as standard, third and fourth group contained two different concentrations (250 & 500 mg/ml) of ethanolic extract of flower of *L. camara*. All the dilutions were made using distilled water. *Pheretima posthuma* was placed in petridish containing two different concentrations (250 & 500 mg/ml) of ethanolic extract of flower of *L. camara*. Each petridish was placed with 2 worms and observed for paralysis or death. Mean time for paralysis was noted when no movement of any sort could be observed, except when the worm was shaken vigorously; the time death of worm (min) was recorded after ascertaining that worms neither moved when shaken nor when given external stimuli. The test results were compared with reference compound albendazole (20 mg/ml) treated samples [7-11].

The data of anthelmintic evaluations were expressed as mean ± S.E.M of six earthworms in each group. The statistical analysis was carried out using one-way ANOVA followed by Tukey's t-test. The difference in values at $p< 0.01$ was considered as statistically significant.

In the present investigation, the ethanolic extracts of *L. camara* flowers were evaluated for its anthelmintic potential. It is evident from the experimental data that, the ethanolic extract of *L. camara* flowers showed significant ($p<0.01$) anthelmintic activity at 500 mg/ml when compared with the standard drugs, albendazole at 20 mg/ml concentration. Ethanolic flower extract of *L. camara* 500 mg/ml showed the paralysis at 1.02 ± 0.46 and death at 1.32 ± 0. Study result revealed that for ethanolic extract flower of *L. camara* 250 mg/ml the paralysis time was at 05.4 ± 1.12 min and death time at 7.39 ± 1.32 min and for albendazole drug 20 mg/ml the paralysis time was at 2.03 ± 0.52 and death at 2.40 ± 0.36 (Table 1).

The *L. camara* flower extracts has showed significant anthelmintic activity at all the tested doses when compared to standard drug as albendazol. Highest activity exhibited by the higher concentration (500 mg/ml) which assures the ethno-medicinal claim. Hence, we can think about this herb as alternate source of anthelmintic drugs and also can generate new active lead for suitable anthelmintic drug.

Table 1: Anthelmintic activity ethanolic extract of flowers of *L. camara* Linn

S. No.	Drug/extracts and concentration	Paralysis time (min)	Death time (min)
1.	Control (distilled water)	-	-
2.	Albendazole 20 mg/ml	2.03±0.52*	2.40±0.36*
3.	Ethanolic extract of flowers of *L. camara* 250 mg/ml	05.04±1.12*	7.39±1.32*
4.	Ethanolic extract of flowers of *L. camara* 500 mg/ml	1.02±0.46*	1.32±0*

All values represent mean ± S.E.M; n=6 in each group. * $p < 0.01$

Comparisons made between standard versus treated groups, $p<0.01$ was considered significant

References

1. Tandon V, Yadav AK, Roy B, Das B. Phytochemicals as cure of worm infections in traditional medicine system. Emer Trend Zool 2011; 16: 351–378.
2. Nandhini A, Sumathi C. Review: An overview of herbals used in Helminthiasis. World J Pharm Res 2014: 3: 350-362.
3. Venkatachalam T *et al*. Physicochemical and preliminary phytochemical studies on the *Lantana camara* (L.) fruits. Int J Pharm Pharm Sci 2011; 3: 52-54.
4. Kensa VM. Studies on phytochemical screening and antibacterial activities of *Lantana camara* Linn. Plant Sciences Feed 2011;1: 74-79
5. Kalita S *et al*. Phytochemical composition and in vitro hemolytic activity of *Lantana camara* L. (Verbenaceae) leaves. Pharmacologyonline 2011; 1: 59-67.
6. Bhakta D, Ganjewala D. Effect of leaf positions on total phenolics, flavonoids and proantho-cyanidins content and antioxidant activities in *Lantana camara* (L). J Sci Res 2009; 1: 363-369
7. Prashanta KD, Ranjib G. *In vitro* anthelmintic activity of *Acorus calamus* Leaves. Asian J Pharm Clin Res 2013; 6:135-137
8. Alawa CB, Adamu, AM Getu JO, Ajansui O J, Abdu PA, Chiezey NP, Alawa JN, Bowman DD. *In vitro* screening of two Nigerian medicinal plants (*Vernonia amygdalina* and *Annona senegalensis*) for anthelmintic activity. Vet Parasitol 2009; 113: 73-81.
9. Shivkumar YM, Kumar VL. Anthelmintic activity of latex of *Calotropis procera*. Pharma Biol. 2003; 41: 263-265.
10. Kaushik RK, Katiyar JC, Sen AB. Studies on the mode of action of anthelmintics with *Ascardia galli* as a test parasite. Indian J Med Res 1974; 64: 1367-75.
11. Yadav AK, Temjenmongla. Anthelmintic activity of *Gynura angulosa* against *Trichinella spiralis* infections in mice. Pharmacologyonline 2006; 2: 299-306.

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