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EVALUATION OF ANTHELMINTIC POTENTIAL OF ETHANOLIC EXTRACT OF *LANTANA CAMARA* STEMS

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ABSTRACT

Parasitic worms (helminths) of the gastrointestinal (GI) tract are pathogens of major global importance. Over a billion people, mainly in developing countries, are estimated to be infected with soil-transmitted helminths, whilst helminth infection is also a serious problem in livestock production worldwide, causing significant economic losses and threatening food security. Control of helminths relies almost exclusively on a limited number of synthetic anthelmintic drugs. Ethanolic extract of the stems of *Lantana camara* Linn were screened for its anthelmintic activity against Pheretima posthuma. The parameters like the time of paralysis and the time of death were determined by using the extract at the concentrations of 250 and 500mg/ml. The results of the study shows that ethanolic extract of stems of *Lantana camara* Linn showed significant anthelmintic activity at a dose of 500 mg/ml when compared to standard drug albendazole at 20mg/ml concentration.

KEYWORDS: Anthelmintic activity, *lantana camara*, Ethanolic extract.

INTRODUCTION

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.[1-3]

Besides, the continued usage of current anthelmintic drugs is also posing a major problem of drug resistance in several parasite species. There is thus an urgent need for newer and inexpensive drugs that are able to act for longer periods before resistance set in. In this context, traditional medicines, based largely on chronic, debilitating nature; they probably cause more morbidity and greater economic and social deprivation among humans and animals than any single group of parasites. Chemical control of helminthes coupled with improved management has been the important worm control strategy throughout the world.

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.[4-5]

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.[6-7]

The aim of present present study was to comparatively evaluate anthelmintic activity of ethanolic extract of *Lantana camara* Linn stems and leaves in vivo.

MATERIAL AND METHODS

Collection and authentication of Plant

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

Drugs and Chemicals

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.

Preparation of Extract

Maceration: Ethanolic Extract

Procedure

Stems of *lantana camara* collected and shade dried. The dried leaves were then converted to coarse powder with the help of pestle mortar. The powdered drug was then extracted by maceration process. The maceration is performed at room temperature and ethanol is used as solvent for extraction. 100 gm of coarse powdered drug was macerated with 300 ml of ethanol for 24 hrs with occasional shaking in a conical flask. After 24 hrs the drugs was filtered and extract so obtained was concentrated by heating the extract on water bath till it becomes semi solid extract. The extract was placed in closed container in cool and dry place to prevent any microbial growth.[8]

Experimental Design

The anthelmintic activity was performed according to the standard method. On adult Indian earth worm Pheretima posthuma as it has anatomical and physiological resemblance with the intestinal round worm parasites of human beings. Pheretima posthuma was placed in petridish containing two different concentrations (250 & 500 mg/ml) of ethanolic extract of stems of lantana 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.[9-10]

RESULTS AND DISCUSSION

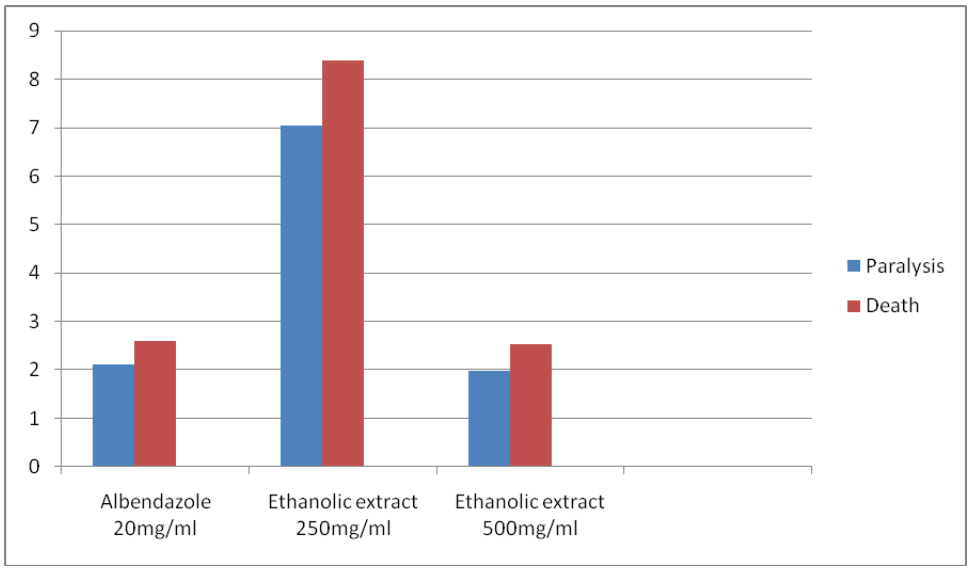
In the present investigation, the ethanolic extract ofstems parts of the plants *lantana camara* were evaluated for its anthelmintic potential. It is evident from the experimental data that, the ethanolic extracts of various parts of the plants *lantana camara* showed significant ($P<0.01$)

anthelmintic activity at 20 mg/ml when were comparable with the standard drugs, Albendazole at same concentration.

It reveals that ethanolic extract stems of *lantana camara* 250mg showed the significant paralysis at 08.04±1.12 min and death at 9.39±1.32 min and extract stems of *lantana camara* 500mg showed the paralysis at 2.05±0.46 and death at 3.32±0 when compared with standard Albendazole drug 20mg\ml showed the paralysis at 2.03 ± 0.52 and death at 2.40 ± 0.36 (Table 1).

Table 1: Anthelmintic activity of *lantana camara.*

S. No.	Drug & conc.	Paralysis time (min)	Death time (min)
1.	Albendazole 20mg\ml	2.03±0.52	2.40±0.36
2.	*lantana camara* 250mg\ml	08.04±1.12	9.39±1.32
3.	*lantana camara500mg\ml*	2.05±0.46	3.32±0.



Graph 1: Anthelmintic activity of *Lantana Camara* against Earthworm.

CONCLUSION

The ethanolic extracts stems of *lantana camara* has showed significant anthelmintic activity at all the tested doses when compared to standard drug as Albendazol. Highest activity exhibited by the higher conc. (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.

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