



Research Article

**EVALUATION OF ANTHELMINTIC ACTIVITY OF *TAGETES ERECTA* LINN**

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**ABSTRACT**

The present study was designed to explore the anthelmintic activity of different extracts of stems of *Tagetes erecta* using methanol as solvents. Various concentrations (150 and 300mg) of all the extracts were tested, which involved determination of time of paralysis and time of death of the worms. It was compared with Albendazole as standard reference and normal saline as control. The study indicated the potential usefulness of against earthworm infections.

**Key words:** Anthelmintic activity, *Tagetes erecta*, Albendazole.

**INTRODUCTION**

Helminthiasis is among the most important animal disease inflicting heavy production losses. The disease is highly prevalent particularly in third world countries<sup>[1]</sup> due to poor management practices. Chemical control of helminthes coupled with improved management has been the important worm control strategy throughout the world. However, increasing problems of development of resistance in helminthes<sup>[2]</sup> against anthelmintics have

led to the proposal of screening medicinal plants for their anthelmintic activity. The plants are known to provide a rich source of botanical anthelmintics<sup>[3]</sup>. A number of medicinal plants have been used to treat parasitic infections in man and animals<sup>[4]</sup>.

*Tagetes erecta* Linn (Asteraceae) is a moderate sized tree found in southern and central parts of India, Sri Lanka and Burma<sup>[5,6]</sup>. The stems are used as anti-

bacterial, anti-microbial<sup>[7]</sup>. Although the stems possess many potential therapeutic activities in traditional system of medicinal practice and possessing rich phytoconstituents, they are not evaluated for their pharmacological activities in detail. Literature review indicates that anthelmintic activity of this species has not been clinically evaluated so far. The present paper reports the anthelmintic activity of stem extract of *Tagetes erecta* against earthworms.

## MATERIALS AND METHODS

### Plant material

The fresh stems of *Tagetes erecta* were collected from the Anurag Pharmacy College Medicinal Garden and authenticated by Department of Pharmacognosy and the voucher specimen was kept in the Department of Pharmaceutical chemistry, Anurag Pharmacy College.

### Extraction of plant drug

The collected stems were washed, shade dried and converted into moderately coarse powder by mechanical grinder. The powdered material was extracted successively with methanol by using soxhlet apparatus. The solvent was removed under reduced pressure which yields different successive extracts in the form of semisolid mass.

### Collection of worms

Indian adult Earthworms (*Pheretima posthuma*) were collected from the local market. Selected earthworms are 4-6 cm in length and 0.1-0.2 cm in width. The earthworms were washed with normal saline to remove all the faecal matter.

### Preparation of test samples

Test samples of the extract were prepared at the concentrations of 150 mg, 300mg.

### Anthelmintic Assay

The anthelmintic activity was performed according to the method of Ghosh *et al*<sup>[8]</sup> on adult Indian earthworm *Pheretima posthuma* due to its anatomical and physiological resemblance with the intestinal round worm parasites of human beings.

Twenty four earthworms were placed in petri dish and two different concentrations (25 and 50 mg) each of crude extract of methanol were poured and observed for paralysis and death. The mean time for paralysis was noted when no movement of any sort could be observed, except when the worm was shaken vigorously and death was concluded when the worms lost their mortality followed with fading away of their body colour<sup>[9]</sup>.

### Statistical analysis

The result were express as Mean  $\pm$  SEM. Statistical analysis was carried out using one way ANOVA followed by Student-t test.

## RESULTS AND DISCUSSION

Anthelmintic activity of *Tagetes erecta* is confirmed by examining the time taken for paralysis (P) and death (D) for *Pheretima posthuma* worms were reported in Table 1. As shown in Table 1, methanolic extract of *Tagetes erecta* exhibited anthelmintic activity in dose dependent manner taking shortest time for paralysis (P) and death (D) with 300mg concentration. From the above results, it was observed that

methanolic extract was more potent than the Albendazole.

The anthelmintic property when compared with control and standard group. Thus, the activity revealed concentration dependence nature of the different extracts. It could be concluded that methanolic extract of *Tagetes erecta* showed most potent anthelmintic activity. Further studies are required to identify the actual chemical constituents that are present in the crude extract of this plant which are responsible for anthelmintic activity.

**Table 1: In vitro anthelmintic activity of various extracts of *Tagetes erecta* Linn stem**

GROUPS	CONCENTRATION USE D (mg/ml)	TIME TAKEN FOR PARALYSIS (min)	TIME TAKEN FOR DEATH (min)
Control (Normal saline)	25	-	-
	50	-	-
Standard (Albendazole)	25	40±0.21	48±0.45
	50	46±0.45	52±0.32
Methanol extract	150	35±2.46**	39±1.45**
	300	30±1.42**	37±0.91**
Aqueous extract	150	43±0.34	50±0.27
	300	41±0.29	48±0.11

Each value represents mean ± SEM (N=2) in each concentration and each groups.

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