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HELMINTHOLYTIC ACTIVITY OF *ZINNIA ELEGANS*

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ABSTRACT

In the present study an endeavour has been made to compare the helmintholytic potential of various extracts of leaf of *Zinnia elegans* with Albendazole against *Eisenia fetida*. Methanolic extract of *Zinnia elegans* were used as test solution. Albendazole was used as allopathic standard. Normal saline served as a control. Study involved the determination of time of paralysis as well as time for death of worms. The results revealed that methanolic extract of *Zinnia elegans* have significant anthelmintic activity in 10mg/ml concentration.

INTRODUCTION

Herbs and preparations have been used to treat ailments since medicine began. The treatment of diseases with medicines of plant origin is an integral part of many cultures throughout the world. The most ancient plants thought to be of medical significance were discovered in prehistoric graves and are 60,000 years old. Nowadays 80% of the world's population uses medicines, which are directly or indirectly derived from plants. Worldwide, such medicines make up a 25% share of the pharmaceutical arsenal. In Europe, most notably in German-speaking countries, one special feature has been the emergence of phytotherapy as a separate therapeutic system based on the traditional usage of plants in medicine and the extraction of active substances from plants. Simultaneously with phytotherapy, various therapeutic doctrines such as homeopathy have arisen in which combined under collective designation "medicines from plants". People frequently use these as synonyms, but these therapeutic approaches differ widely. ^[1]

The history of medicine of India can be traced to the remote past. However, there is no authentic record of medicines used by primitive man. But the Rig Veda, which is one of the oldest books in the library of man being written between 4500 BC and 1600 BC, supplies curious information on the subject. The earliest mention of the medicinal use of plants is to be found in the Rig Veda. However, it is in the Ayurveda, which is considered as an Upaveda (or supplementary hymns designed for the more detailed instruction of the mankind), that definite properties, plants and their uses have been given in some detail. Ayurveda, in fact is the very foundation stone of the ancient medicinal science of India. The age of Ayurveda is fixed somewhere about 2500 to 600 BC. It has eight divisions, which deal with different aspects of the science of life and the art of healing; these were followed by two works written later i.e., Sushruta and Charaka. In Sushrutasamhita, surgery is dealt, but there is a comprehensive chapter on therapeutics. Charaka deals more with medicine, as it was known to the ancient Hindus. In Ayurveda, out of 2000 drugs used about 1500 are of plant origin. ^[2]

- **Zinnia** (*Zinnia elegans*) It is obtained from the dried leaves of *zinnia elegans* belonging into family Asteraceae.

Karl Asmund Rudolphi (1771-1832)

Rudolphi was born in Stockholm to German parents. He was awarded his doctorate in 1795, from the University of Greifswald, where he was appointed Professor of Anatomy. He worked

widely across the fields of botany, zoology; His first great publication was a study of parasitic worms, the "*Enterozoorum Sive Vermium Intestinalium Historia Naturalis*". This is the first publication to describe the *Nematoda*. His second, the "*Synopsis cui accedunt mantissima duplex et indices locupletissima*" was the first work to detail the life cycle of important nematode parasites of humans, such as *Ascaris lumbricoides*.

❖ **Helminthiasis:[5,6]**

“Helminths“ means a parasitic worm and Helminthiasis means the presence of worm in body, this is more common in rural area if this not treated it may fetal. In general helminthism is known to be disease of children but it may infect to adults. There are many parasites which infect to human are pinworm, tapeworm, roundworm, fish tapeworm, flukes, dwarf tapeworm, whipworm.

Anthelmintic are drugs that kill or expel infecting helminthes. Helminthiasis is prevalent globally (1/3 of world population harborous them) but it is more common in developing countries with poor personal and environmental hygiene. Multiple infections in same individual are not in frequent .In human, G.I.T. is the abode of many helminthes, but some also live in tissues,

Helminth harm to body as follow:

- ❖ Harm the host by depriving him of food
- ❖ Causing blood loss
- ❖ Injury to organs
- ❖ Intestinal or lymphatic obstruction
- ❖ By secretion.

MATERIAL AND METHOD

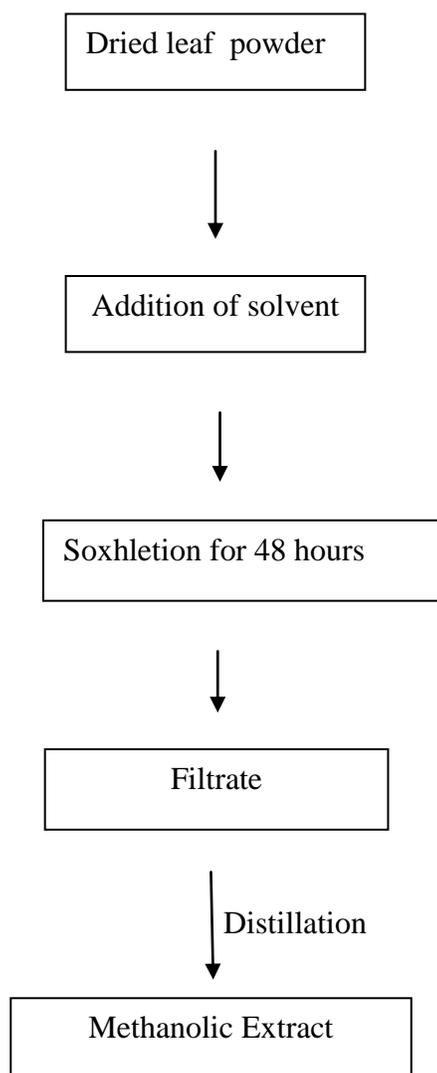
Collection and Authentication of *Zinnia elegans*

The plants of *Zinnia elegans* were collected from Janai-malai area satara, the collected plant was authenticated by Botanical Department of Y. C. institute, Satara.

Extraction of Plant Sample

The fresh leaves were washed with tap water 3 to 4 time, cleaned, and shade dried for several day, powdered (200g) with the help of electric grinder. Soxhlet Apparatus was used to extract the powder using methanol as solvents.

Schematic diagram of successive extraction procedure for selected plant



Anthelmintic activity of extracts of *Zinnia elegans*

❖ Preparation of Test Suspension

The extracts of *Zinnia elegans* were suspended in normal saline vehicle and used for anthelmintic evaluation and the suspensions were made up of 10 mg/ml in normal saline.

❖ Preparation of Drug Solution:

For positive control, an Albendazole suspension was used. The selected Albendazole suspension was a marketed formulation i.e. ABZ suspension, Indoco Pvt. Ltd. 10 mg/ml concentration was prepared.

Chemicals:

Drug: Albendazole : ABZ suspension, Indoco Pvt. Ltd
 Testing sample : Methanolic extract of *Zinnia elegans*
 Vehicle : Normal saline

Grouping of animals:

The experimental design of the investigation was carried out in six groups with six worms in each group and carried out in the following regimes.

❖ **Group I**

Served on solvent control, which received only normal saline.

❖ **Group II**

Received anthelmintic drug (Albendazole 10 mg/ml) in normal saline.

❖ **Group III**

Suspended in test solution Methanolic extract at concentration 10 mg/ml in normal saline.

RESULTS AND DISCUSSION

Data showing the time taken for paralysis and death by Indian earthworm (i.e. *Eisenia foetida*)

Treatment	Concentrations mg/ml	Time for Paralysis (P) in min (Mean & SEM)	Time for death (D) in min. (Mean & SEM)
Control (Saline)	-----	-----	-----
Methanolic Extracts	10mg/ml	3.85±0.17	4.96±0.75
Std. Albendazole	10 mg/ml	4.38±0.84	6.5±0.44

Result expressed as Mean ± SEM from six observations.

For the 1) **Methanolic extract** the time for Paralysis (P) in minutes was found be **3.85±0.17** and time for Death (D) in minutes was found to be **4.96±0.75**.

2) **Std. Albendazole** the time for Paralysis (P) in minutes was found **4.38±0.84** and time for Death (D) in minutes was found to be **6.5±0.44**.

CONCLUSION

In the pharmacological evaluation of selected plants for the anthelmintic activity by *in vitro* model by using the Indian adult worm *Eisenia foetida*, Methanolic extract of leaf of *Zinnia elegans* exhibits anthelmintic activity better as compared to standard Albendazole. Methanolic extract giving shortest time of paralysis and death at 10mg/ml concentration as compared to standard drug. From the results, it was concluded that the Methanolic extracts of *Zinnia elegans* leaves was useful in treatment of worm infection (Helminthiasis).

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