

EVALUATION OF THE ANTHELMINTIC ACTIVITY OF *MORINGA OLEIFERA* SEEDS.

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Abstract

The methanolic extract of *Moringa oleifera* seeds (MEMOS) was investigated for its anthelmintic activity. Petroleum Ether, chloroform, and alcoholic extract of seeds of *Moringa oleifera* were evaluated separately for anthelmintic activity on adult Indian earthworms, *Pheretima posthuma*. Various concentrations of all extracts were tested and results were expressed in terms of time for paralysis and time for death of worms. Piperazine citrate (10 mg/ml) was used as a reference standard and distilled water as a control group.

Keywords: Anthelmintic activity, Extracts, *Pheretima posthuma*, Piperazine citrate.

Introduction

Helminthic infections are among the most common infection in human beings, affecting a large proportion of the world's populations. Diseases caused by helminth parasites in livestock continue to be a major productivity constraint, especially in small ruminants in the tropics and subtropics[1] Anthelmintics are drug that either kill (vermicides) or expel (vermifuge) infesting helminths[2], Anthelmintic drugs are used to eradicate or reduce the number of helminthic parasites in the intestinal tract or tissues of the body. These parasites have many biochemical and physiological processes in common with their human hosts, yet there are subtle differences that are beginning to yield to pharmacologic investigation[3]. Helminthiasis or infection with parasitic worms, affects over two billion people worldwide causing malnutrition, blindness, debility, disfigurement and death[4]. There has not been enough emphasis on the research efforts and consequently not enough new agents discovered in the last 30 years to cope with the spreading of parasitic infections.

Moringa oleifera Lam. (family – Moringiaceae) is the most common species cultivated throughout the tropical regions of the world (Tsaknis *et al.*, 1999; Vlahov *et al.*, 2002; Manzoor *et al.*, 2007; Muluvi *et al.*, 1999). *Moringa oleifera* is found throughout India. It is known as drumstick in English, Mungna in Hindi, Shevgi in Marathi[5]. The Moringiaceae family consists of 12-14 species which belongs to a single genus called Moringa. All of the species are native of north India, where they have been introduced

to all warm regions of the world[6]. The plant was reported to contain various amino acids, fatty acids, vitamins and nutrients (Nesmani *et al.*, 1999) and its constituents such as leaf, flower, fruit and bark have been anecdotally used as herbal medicine. *Moringa oleifera* is used as drug by many ayurvedic practitioners for the treatment of asthma and chronic rheumatism[7]. This study was undertaken to evaluate the anthelmintic activity of methanolic extract of *Moringa oleifera* in adult Indian earthworms, *Pheretima posthuma* at different doses.

Material and Method

Plant materials:

Seeds of *Moringa oleifera* were collected from local area of Chevella region of Ranga Reddy district, A.P and taxonomically identified at the Dept. of Botany, Anwarul uloom college, Hyderabad as *Moringa oleifera* Lam. belonging to the family Moringiaceae.

Preparations of extract:

The seed was collect shade dried and powdered. 150gm of powder subjected to extraction by soxhlet apparatus using various solvent such as petroleum ether, chloroform and alcoholic extract. The solvent was then removed under reduced pressure which obtained a greenish-black colour sticky residue. The prepared extracts were tasted for anthelmintic activity.

Animals:

Indian adult earthworms (*Pheretima posthuma*) collected from moist soil and washed with normal saline to remove all faecal matter were used for the anthelmintic study. The earthworms of 3-5 cm in length and 0.1-0.2 cm in width were used for all the experimental protocol due to their anatomical and physiological resemblance with the intestinal roundworm parasites of human beings.

Phytochemical screening:

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In order to determine the presence of alkaloids, glycosides, flavonoids, tannins, terpenes, sterols, saponines, fats, and sugars, a preliminary phytochemical study (colour reaction) with various plant extract and fraction was performed [8]

Study of anthelmintic activity:

The anthelmintic activity was done on adult Indian earthworm, *pheretima posthuma* due to its anatomical and physiological resemblance with the intestine roundworm parasites of human beings [9,10,11]. Five groups of approximately equal sized Indian earthworms consisting of six earthworms in each group were released into 10 ml of desired formulation. Group first serve as control, receive only normal saline; Group second serve as standard, receive standard drug Piperazine citrate of different concentration; Group third serve as petroleum ether; Group fourth serve as chloroform and Group fifth serve as alcoholic extract of different concentration.

Observations were made for the time taken to paralysis and death of individual worms. Paralysis was said to occur when the worms did not revive even in normal saline [12]. Death was concluded when the worms lost their motility followed with fading away of their body colours [13]. Results are shown in (table-1).

Result and discussion:

Preliminary phytochemical screening has shown the presence of saponin, carbohydrates, alkaloids, tannins, proteins, flavonoids in methanolic extracts of plants. The data revealed that methanolic extracts of seeds of the plant *Moringa oleifera* showed significant anthelmintic activity at 100 mg/ml concentrations whereas Chloroform, showed moderate activity and Petroleum ether extract is having least anthelmintic activity. Results are comparable with standard drugs Piperazine citrate. (Table 1) reveals that total methanolic extract of seed of *Moringa oleifera* showed best anthelmintic activity.

Table 1. Anthelmintic activity of *Moringa oleifera* seed extract.

GROUP	TREATMENT	CONC. (MG/ML)	PARALYSIS TIME (MIN.)	DEATH TIME (MIN.)
1	Vehicle	-	-	-
2	Piperazine citrate	10	22.36±1.5	43±6.8
3	Petroleum ether	50 100	60.22±1.2 55.13±0.2	81.08±2.8 65.14±3.1
4	Chloroform	50 100	39.11±1.8 33.05±1.2	60.04±2.1 52.11±1.1
5	Methanolic extract	50 100	32.13±0.3 28.11±1.3	45.22±1.9 38.12±0.7

All values represent Mean +SD; n= 6 in each group.

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