



ANTHELMINTIC ACTIVITY OF CRUDE EXTRACTS OF *ALLIUM SATIVUM* and *CUCURBITA MAXIMA*

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ABSTRACT:

The crude extracts of *Allium sativum* and *Cucurbita maxima* were evaluated for establishing the claim of their anthelmintic potential. Both the extracts showed good anthelmintic activity in dose dependent manner giving shortest time of paralysis and deaths compared to the standard drug (Albendazole). The crude extract of *Allium sativum* showed paralysis time of 19.33±1.24min, 26.66±1.24 min and 28.0±0.81min and death time of 67.33±1.24 min, 61.33±1.24 min and 61.66±1.24 min with the concentration 100%, 50% and 25% respectively. Where as the stand showed the paralysis time of 64.66±1.69 min and death time of 76.0±1.63min at 400mg dose. The extract of *Cucurbita maxima* showed paralysis time 71.33±32.87 min, 87.0±5.71 min and 115.66±43.70 min and death time 50.00±10.70 min, 62.00±0.81 min and 73.33±9.39 min with the dose 400mg, 200mg and 100mg respectively. *Allium sativum* showed potent anthelmintic activity as compare to *Cucurbita maxima*.

KEY WORDS: Anthelmintic, Garlic, Pumpkin, Earth worm.

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1. INTRODUCTION:

Helminthiasis is a macro parasitic disease of humans and others animals It also known as worm infection.¹ Helminth infections are the common infections in man and exaggerated worldwide population. Helminthiasis observed in various tropical and subtropical areas and it is also classified as neglected tropical disease. It spread the majority of human in developing countries. The disease is transmitted through fecal-oral route, skin penetration. Helminth infections are mainly form due to improper sanitation. In the Helminthiasis infection the most common symptoms are abnormal pain, diarrhea, fever, anorexia, fatigue etc.² In recent times herbal medicines have become indispensable and are forming an integral part of the primary health system of many nations.³ The synthetic anthelmintics used are not very safe because of side effects and toxicity and many of them are not recommended for young children and pregnant ladies.⁴

In ancient times, *Garlic* was used as a remedy for intestinal disorder, flatulence, worms, respiratory infections, wounds. A small amount of *Garlic* has the potential of curing a man from a large number of diseases by inhibiting the population of different strains of bacteria and fungi. Sanskrit records shows its medicinal use about 5000 years ago and it has been used for at least 3000 years in Chinese medicine.⁵

The seeds of pumpkin (*Cucurbita maxima*) are generally considered to be agro-industrial wastes and are discarded. Pumpkin used for anthelmintics, antimicrobial, antiviral, cytotoxicity and antitumor activities from the ancient times. Pumpkin seeds were used to expel tapeworms and other intestinal parasites by indigenous people of North America. So, the present study attempts to evaluate

anthelmintic activity of crude extract of *Garlic* and seeds of pumpkin⁶.

2. MATERIALS AND METHOD:

2.1 Collection of Plant Material:

The bulbs of *Allium sativum* belongs from the family Liliaceae (*Garlic*) and seeds of *Cucurbita maxima*, belongs to the family Cucurbitaceae (*Pumpkin*) were collected from Uluberia, Howrah district of West Bengal in the month of October 2017 and authenticated by Dr. R.K. Dasgupta, Associate Professor, Dept. of Pharmacognosy, Bharat Technology, Uluberia.

2.2 Preparation of extracts:

The bulbs of *Garlic* and seeds of *Pumpkin* were dried under shade, powdered to half dust and subjected to successive solvent hydro alcoholic extraction (60-40%; Ethanol-Water) using Soxhlet extractor. Extracts were vacuum dried and stored at 4°C for further use.⁶

2.3 Collection of Earth Worm

Indian adult earthworms (*Pheretima posthuma*) were used for to study anthelmintic activity. They were collected from the water logged area of soil, Uluberia (Howrah Dist.), West Bengal. They were washed with normal saline to remove all fecal matter. The Earthworms of 5-8 cm in length and 0.2-0.3 cm in width were used for all experimental protocol.⁶

2.4 Anthelmintic Assay:

The Anthelmintic assay was carried as per the method of (Aswar, M. et al., 2008,) with minor modifications. Suspensions of the samples were prepared by triturating the samples with 0.5%

tween 80 and distilled water. The resulting mixtures were then stirred for 30 min. The resulting suspensions were diluted to make concentrations (400mg, 200mg, and 100mg / 40 ml) . These suspensions were used for anthelmintic activity. The standard drug Albendazole was also used in suspension form. Suspension of distilled water and tween 80 (0.5%) was used as control. The worms were divided into groups containing five earthworms in each group. 40 ml of samples, standard and control were poured in different petridishes. All the earthworms were washed in normal saline solution before using. Five worms (same type) in each were placed⁶. Time for paralysis was noted when no movement observed except when the worms were shaken vigorously. Time for death of worms were recorded after ascertaining that the worms neither moved when shaken vigorously nor when dipped in warm water (50°C)15min. The mean paralyzing time and death time were calculated and summarized in Table 1.

2.5 Statistical Analysis

All the results were expressed as mean \pm Standard Error Mean (SEM). Statistical analysis was done by using one way ANOVA followed by Dunnett's 't' test.

3. RESULT AND DISCUSSION:

Preliminary phytochemical screening of *Garlic* bulbs contain carbohydrates, proteins (Albumin) fat, mucilage, volatile oil, Phosphorus, Iron, Copper. Volatile oil of the drug is the chief active constituent and contains Allyl propyl disulphide, Diallyldisulphide, Alliin, Allicin. Alliinby action of

enzyme allinlyase is converted into allicin. Sulfur compounds are the main chemical constituents responsible for taste of *Allium sativum*, and likely for its biological effects⁷

Preliminary phytochemical screening of Pumpkin seeds also showed that it have proteins, fibre, fat, and total sugars, β -sisosterol, protocatechuic, caffeic, syringic, vanillic, p-coumaric and ferulic fatty acids like oleic, linoleic, and palmitic acids . Seed oil was also found to be rich in tocopherols with a predominance of δ -tocopherol⁸

Results showed that *Allium sativum* (*Garlic*) has potent anthelmintic activity as compare to standard and seeds of *Cucurbita maxima*. Five earth worms of similar size were placed in a petridishes of 3.5-4 inches diameter containing 40 ml of suspension of each test sample. The time required for paralysis and death of the worms were noted. From the results is clear that all the extracts exhibited potent anthelmintic activity at low concentration. Paralysis time of 19.33 \pm 1.24 min, 26.66 \pm 1.24 min and 28.0 \pm 0.81min and death time of 67.33 \pm 1.24 min, 61.33 \pm 1.24 min and 61.66 \pm 1.24 min for the *Allium sativum* extract was decreased as the concentration increased from 25%, 50% and 100% respectively. Whereas the stand showed the paralysis time of 64.66 \pm 1.69 min and death time of 76.0 \pm 1.63 min at 400mg dose. The extract of *Cucurbita maxima* showed the moderate activity. *Cucurbita maxima* took time for paralysis were 71.33 \pm 32.87 min, 87.00 \pm 5.71 min and 115.66 \pm 43.70 min and death time 50.00 \pm 10.70 min, 62.00 \pm 0.81 min and 73.33 \pm 9.39 min 400mg, 200mg and 100mg respectively as shown in Table 1.

Table No 1: Anthelmintic activity of *Allium sativum* and *Cucurbita maxim*

Drug	Time in Minutes	
	Time for paralysis	Time for Death
Control	Nil	Nil
<i>Allium sativum</i> 100%	19.33±1.24*	67.33±1.24*
<i>Allium sativum</i> 50%	26.66±1.24*	61.33±1.24*
<i>Allium sativum</i> 25%	28.0±0.81*	61.66±1.24*
<i>Cucurbita maxima</i> 100%	71.33±32.87*	50.00±10.70
<i>Cucurbita maxima</i> 50%	38.00±5.71*	62.00±0.81
<i>Cucurbita maxima</i> 25%	115.66±43.70	73..33±9.39*
Standard (400mg)	64.66±1.69	76.0±1.63*

From the result shown in the Table 1 hydroalcoholic extract of *Allium sativum* exhibited anthelmintic activity in dose dependent manner giving shortest time of paralysis and deaths as compared to the standard drug Albendazole. Whereas and seeds of

Cucurbita maxima exhibited anthelmintic activity in similar manner *Allium sativum*, which is comparable to standard. *Allium Sativum* has shown potent anthelmintic activity.

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