



ISSN: 2395-7476  
IJHS 2017; 3(1): 14-16  
© 2017 IJHS  
www.homesciencejournal.com  
Received: 04-11-2016  
Accepted: 05-12-2016

**Dr. SR Shemi George**  
Asst. Professor, Morning Star  
Home Science College,  
Angamaly, Kerala, India

**Alda Gelu**  
P.G Student, Morning Star  
Home Science College,  
Angamaly, Kerala, India

## A study on anthelmintic effect of the selected spices

**Dr. SR Shemi George and Alda Gelu**

### Abstract

Helminths are worm-like organisms living in and feeding on living hosts, receiving nourishment and protection while disrupting their hosts' nutrient absorption, causing weakness and disease. Objective of the study was *To Find out the Anthelmintic effect of selected spices on experimental animals*. Powders were prepared by pulverizing the dried (sun shade and hot air oven) Clove, Garlic, Tamarind and Turmeric with the help of electric grinder. And it was undergo water extraction. Powders were prepared by pulverizing the dried (sun shade and hot air oven) papaya, pineapple, bitter gourd, with the help of electric grinder. Most of the extracts were better than the standard drug in killing the earthworm. The aqueous extract of Clove was very effective than other samples. This was able to kill the worms at 25 minutes respectively in 100% concentration. Clove was able to kill the worms in 43 and 67 minutes at 50% and 20% concentration. The paralysis (P) time was 12, 32 and 45 minutes for the extract of cloves.

**Keywords:** Anthelmintic, Helminthes, Vermifuges

### 1. Introduction

Helminthes infections are among the commonest infections in man, affecting a large proportion of the world's population. Helminths are worm-like organisms living in and feeding on living hosts, receiving nourishment and protection while disrupting their hosts' nutrient absorption, causing weakness and disease. Those that live inside the digestive tract are called intestinal parasites.

Synthetic drugs are not easily available in some of the remote rural areas of developing countries or have some serious disadvantages such as development of drug resistant in continuous use adverse drug reactions/residual effects. Therefore, use of common spices as anthelmintics offer an alternative source can solve these problems and more acceptable to the native users. Worm infestation is one of the major causes of childhood malnutrition, anaemia, stunted physical and mental growth, psycho-social problems and this along with repeated gastrointestinal and upper respiratory tract infection contributes to high morbidity in children and remains a major cause of high infant and child mortality in our country. The infection is usually transmitted via ingestion of eggs from contaminated food stuffs, infection may occasionally occur via inhalation of eggs and swallowing of infected secretions [5].

Cloves are the dried flower buds of an aromatic tree are used as a spice. Cloves are now harvested primarily in Indonesia, Madagascar, Pakistan, Sri Lanka and in India. Clove is long lived evergreen plant which having rosy pink bud which becomes fragrant red flowers & purple fruit. Clove oil mainly used as – Analgesic, Antibacterial, Anticonvulsant, Anticoagulant, Antifungal, Anti-infectious, Anti-inflammatory, Antioxidant, Antiparasitic, Strong Antiseptic, Antitumor, Antiviral, Disinfectant, Immune stimulant, Dental Analgesic, Carminative. Cultivated practically throughout the world, garlic appears to have originated in central Asia and then spread to China, the Near East, and the Mediterranean region before moving west to Central and Southern Europe, Northern Africa (Egypt) and Mexico. Garlic has been used for thousands of years for medicinal purposes. Garlic extracts have been shown to exert anthelmintic activity against common intestinal parasites, including *Ascaris lumbricoides* and hookworms.

*Tamarindus indica* is a tree belonging to the family Caesalpiniaceae whose different parts are used as traditional medicine as analgesic, anti-inflammatory, diuretic, febrifuge, and anthelmintic, antifungal and in gastrointestinal problems. Tamarind, or *Tamarindus indica* L., is a sub-tropical and tropical fruit-producing tree indigenous to tropical Africa.

**Correspondence**  
**Dr. SR Shemi George**  
Asst. Professor, Morning Star  
Home Science College,  
Angamaly, Kerala, India

It has been used in Ayurvedic medicine for gastric distress as well as to boost cardiovascular health, but the fruit's medicinal values extend beyond those benefits.

The assay was performed on adult Indian earthworm, *Pheretima posthuma* due to its anatomical and physiological resemblance with the intestinal roundworm parasite of human beings. Because of easy availability, earthworms have been used widely for the initial evaluation of anthelmintic compounds in vitro. An adult Indian earthworm *Pheretima posthuma* has anatomical and physiological resemblance with the intestinal roundworm parasites of human beings. *Pheretima posthuma* worms are easily available and used as suitable model for screening anthelmintic drugs. As an important component of complementary and alternative medicine, traditional Ayurvedic medicinal plants may be useful model for the discovery and development of new chemical substances for helminthes control which are generally considered to be very important sources of bioactive substances. Helminthes infection is the parasitic infestation of the body by helminthes that may be cutaneous, visceral, or intestinal. Ascariasis, bilharziasis, filariasis, hookworm, and trichinosis are common forms of the disease.

The main objective of the study was *To Find out the Anthelmintic effect of selected spices on experimental animals.*

## 2. Methodology

### Selection of ingredients

The ingredients selected were Clove, Garlic, Tamarind and Turmeric because these were locally available and can be used by the rural people.

### 2.1 Preparation of spices powder through extraction

The materials used for the study was Clove, Garlic, Tamarind and Turmeric. Powders were prepared by pulverizing the dried A 25 mesh diameter sieve was used to obtain fine dust and preserved them into airtight plastic container, till their use for extract preparation. Previously prepared plants powders were used for preparation of plants extract. Ten grams of each powder were taken in a 500ml beaker and separately mixed with 100ml of distilled water. Then the mixtures were stirred for 30 min by a magnetic stirrer (6000 rpm) and let as such for next 24 hours. The extracts were then filtered through a fine cloth and again through filter paper (Whatman No.1). The filtered material was taken into round bottom flask and then concentrated by evaporation of water from filtrate in a water bath at 50 degree till it reached the final volume of 10ml. After the evaporation of water from filtrate, the condensed extracts were preserved in tightly corked-labelled bottle and stored in a refrigerator until used for screening of anthelmintic activity.

### 2.2 Experimental Design

Indian earthworms were collected from the municipal vermicomposting section of North Paravur, Ernakulam. 58 earthworms were selected with approximate same size. They are washed with normal saline. Indian adult earthworms (*Pheretima posthuma*) of 5-8 cm in length and 0.2-0.3 cm in width were used.

Clove, Garlic, Tamarind and Turmeric was collected from the area within Ernakulam.

### 2.3 Estimation of Anthelmintic activity

*Pheretima posthuma* of 5-8 cm in length and 0.2-0.3 cm in width were used. The worms were divided into different groups (concentrations of ingredients, 1 group with control and

1 group with standard drug) containing three earthworms in each group. 50ml preparation containing three different concentrations (100%, 50% and 20% in distilled water) were prepared and the standard drug solution was poured in different petridishes. All the earth worms were washed in normal saline solution before they were used. Three worms (same type) in each were placed in it. 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 0c). Albendazole (400mg) was used as reference standard while distilled water as control. The anthelmintic assay was carried as per the method of with minor modifications<sup>[1,4]</sup>.

As it has anatomical and physiological resemblance with the intestinal roundworm parasites of human beings<sup>[4]</sup>. *Pheretima Posthuma* worms are easily available and used as suitable model for screening anthelmintic drugs<sup>[2]</sup>.

## 3. Results and Discussion

### 3.1 Effect of Water Extract of the selected spices

#### Effect of water extract

The concentrated extracts of the samples exhibited anthelmintic activity in dose dependent manner taking shortest time for paralysis (P) and death (D) with 100% concentration. The aqueous extract of Clove was very effective than other samples. This was able to kill the worms at 25 minutes respectively in 100% concentration. Clove was able to kill the worms in 43 and 67 minutes at 50% and 20% concentration. The paralysis (P) time was 12, 32 and 45 minutes for the extract of cloves. The death time due to the aqueous extract of garlic was around twice the time taken for paralysis at 100% (P=13min, D=26min) and 50% (P=22min, D=43min) concentration. Tamarind took 42, 51 and 89 minutes to kill the worms at 100%, 50% and 20% concentration respectively. Aqueous extract of turmeric paralyses the worms in 29, 38 and 53 min and killed in 34, 51 and 77 min at 100%, 50% and 20% concentration respectively. Garlic (D=118 min) was less efficient in its 20% concentration than other samples. All the worms died in 37 minutes in Albendazole of concentration 25mg/ml. Bitter gourd was efficient to kill the worms at 27, 33 and 58 minutes at concentration of 100%, 50% and 20% respectively. The efficacies of aqueous extract of the samples were very much better than the Albendazole except turmeric.

**Table 1:** Effect of water extract

Sl. No	Sample	Concentration	Time for paralysis (min)	Time for death (min)
1	Control (d/w)	-	-	-
2	Standard drug Albendazole	25mg/ml	28	37
3	Clove	100%	12	25
		50%	32	43
		20%	45	67
4	Garlic	100%	13	26
		50%	22	43
		20%	77	118
5	Tamarind	100%	20	42
		50%	23	51
		20%	42	89
6	Turmeric	100%	29	34
		50%	38	51
		20%	53	77

A study was conducted on Patterns of geohelminth infection, impact of albendazole treatment and re-infection after treatment in schoolchildren from rural KwaZulu-Natal/South-Africa in the year Aug 2004. The hookworm prevalence in the study population (83.2%) was considerably higher than in other parts of the province whereas *T. trichiura* and especially *A. lumbricoides* prevalence (57.2 and 19.4%, respectively) were much lower than elsewhere on the KZN coastal plain. Single dose treatment with albendazole was very effective against hookworm and *A. lumbricoides* with cure rates (CR) of 78.8 and 96.4% and egg reduction rates (ERR) of 93.2 and 97.7%, respectively. It was exceptionally ineffective against *T. trichiura* (CR = 12.7%, ERR = 24.8%). Re-infection with hookworm and *A. lumbricoides* over 29 weeks after treatment was considerable but still well below pre-treatment levels. High geohelminth prevalences and re-infection rates in the study population confirm the need for regular treatment of primary school children in the area<sup>[6]</sup>.

### 3.2 Comparison of water extract in 100%

From the table.2 it can understand that most of the extracts were better than the standard drug in killing the earthworm. The death of earthworm occurred in 37 minutes by the Albendazole. Pineapple (25 min) was most effective from all other ingredients.

**Table 2:** Comparison of water extract in 100% concentration

Sl. No	Sample	Paralysis (min)	Death (min)
1	Albendazole (25mg/ml)	28	37
2	Clove	12	25
3	Garlic	13	26
4	Tamarind	20	42
5	Turmeric	29	34

### 3.3 Comparison of water extract in 50% concentration

In the table. 3 the detail about the effect of extract in 50% is given. Cloves and garlic are effective than other ingredients because death of the earthworms occurred in 43 minutes. All the other ingredients are also less effective than the standard drug.

**Table 3:** Comparison of water extract in 50% concentration

Sl. No	Sample	Paralysis (min)	Death (min)
1	Albendazole (25mg/ml)	28	37
2	Clove	32	43
3	Garlic	22	43
4	Tamarind	23	51
5	Turmeric	38	51

### 3.4 Comparison of extract in 20% concentration

Bitter gourd is effective in its 20% concentration. The death of earthworm occurred in standard solution was 37 minutes. But garlic took 118 minutes for killing the earthworms.

**Table 4:** Comparison of extract in 20% concentration

Sl. No	Sample	Paralysis (min)	Death (min)
1	Albendazole (25mg/ml)	28	37
2	Tamarind	42	89
3	Turmeric	53	77
4	Clove	45	67
5	Garlic	77	118

## 4. Conclusion

The results of the study had proved that Herbal medicines are good for healthy life and to avoid side effects of the chemical

drugs. Food habits also plays important role in the infection prevalence. The study concludes that the ingredients like cloves, garlic, tamarind and turmeric can be used as medicine for preventing helminthes infections.

## 5. References

1. Aswar Manoj, Aswar Urmila, Watkar Bhagyashri, Vyas Meenakshi, Wagh Akshaya, Gujar N Kishore. Anthelmintic activity of *Ficus benghalensis*, Indian journal of Green pharmacy. 2008; 3:170-172.
2. Dash GK, Suesh P, Sahu SK, Kar DM, Ganpaty S, Panda SB. Evaluation *Evolvulus alsinoides* Linn. For anthelmintic and antimicrobial activities. J Nat Rem. 2002; 2:182-85.
3. Girme AS, Bhalke RD, Ghogare PB, Tambe VD, Jadav RS, Nirmal SA. Comparative In vitro Anthelmintic activity of *Mentha piperita* a *Lantana camara* from Western India. Dhaka Univ J Pharm Sci. 2006; 5:5-7.
4. Mali RG. In vitro Anthelmintic activity of stem bark of *Mimusops elengi* linn. Phcog Mag. 2007; 3(10):73-76.
5. Park K. Park's text book of Preventive and Social Medicine" 19<sup>th</sup> edition. 2007, 202-203.
6. Saathoff E, Olsen A *et al.* Patterns of geohelminth infection, impact of albendazole treatment and re-infection after treatment in schoolchildren. Department of Nutrition, Harvard School of Public Health. Boston. USA. 2004, 2115.