



### ANTHELMINTHIC ACTIVITY OF *Nigella Hispanica* L. SEED EXTRACT

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#### ARTICLE INFO

#### ABSTRACT

##### Key Words

Anthelmintic activity,  
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L., *Pheretimaposthuma*



The aim of the present study was to focus on evaluation of anthelmintic activity of *Nigella hispanica* L. seed extract using adult earthworm, *Pheretimaposthuma*. The ethanolic extract of the crude drug at concentrations of 10 mg/ml, 25mg/ml, 50mg/ml, 100mg/ml and 200 mg/ml were tested which involve determination of paralysis time and death time. Albendazole was used as standard and it was found that the concentrated ethanolic extract (with no traces of solvent) of the *Nigella hispanica* L. seeds which is called as nallajeelakarra in telugu belongs to the family Ranunculaceae was used as food in many parts of the world, showed a better anthelmintic activity in comparison with the standard.

#### INTRODUCTION

Helminthiasis is a macroparasitic disease of humans and animals in which a part of the body is infested with parasitic worms such as pinworm, round worm or tape worm<sup>1</sup>. More than 1.5 billion people, or 24% of the world's population, are infected with soil-transmitted helminth infections worldwide. Infections are widely distributed in tropical and subtropical areas, with the greatest numbers occurring in sub-Saharan Africa, the Americas, China and East Asia. Over 267 million preschool-age children and over 568 million school-age children live in areas where these parasites are intensively transmitted, and are in need of treatment and preventive interventions<sup>2</sup>.

Anthelmintics or anthelmintics are the drugs that destroy or cause the expulsion of parasitic intestinal worms.

Treatment with an anthelmintic drug kills worms whose genotype renders them susceptible to the drug. Worms that are resistant survive and pass on their resistance genes. Resistant worms accumulate and finally treatment failure occurs. Albendazole is the first drug of choice for the treatment of worm infections<sup>3</sup>. Medicinal plants, have been discovered and used in traditional medicine practices since prehistoric times. Recently, WHO (World Health Organization) estimated that 80 percent of people worldwide rely on herbal medicines for some aspect of their primary health care needs. According to WHO, around 21,000 plant species have the potential for being used as medicinal plants. Traditional systems of medicine reports the efficacy of several natural plants in eliminating

worms<sup>4</sup>. *Nigella hispanica* L. is an annual dicotyledon herb which belongs to the family Ranunculaceae, commonly known as black cumin seeds, widely used in Unani, Ayurvedic system for centuries to treat variations like fever, pain, diarrhoea, headache, asthma and also used as additive for spice and flavoured and aromatic substances. Present investigation was focussed to evaluate the anthelmintic activity of *Nigella hispanica* L. seeds using adult earthworms *Pheretimaposthuma*.

#### MATERIALS AND METHODS:

Plant extracts found to have anti-oxidant activity<sup>5</sup>, anti-cancer activity<sup>6</sup>, anti-diabetic activity<sup>7</sup>, anti-microbial<sup>8</sup>, anti-allergic activity<sup>9</sup>, anti-inflammatory<sup>10</sup> activity. Thymoquinone is an active compound obtained from the crude seed extract of *Nigella hispanica* L. which possesses anti-oxidant or anti-inflammatory efficacy in models of *invitro* and *invivo* investigations as well as neuro-degradation and carcinogenesis. Nigellidine, nigellimine and nigellicine are the alkaloids isolated from the black seeds, these are devoid of pharmacological effects<sup>11</sup>. Different vernacular names of the plant are Panacea in Latin, Habbah Sawdada in Arabic, Hak Jung Chou in China, Shoneez in Persia and in India it is called as Kalonji. The telugu name of *Nigella hispanica* L. is Nalla jeelakarra<sup>12</sup>. The seed grains are deep black, sharp edged. The black seeds taste like a combination of onions, black pepper, and oreganos. They have a pungent, bitter taste and smell. The flowers are delicate and usually coloured pale blue and white, with 5-10 petals. The fruit is large and inflated capsule composed of 3-7 united follicles, each containing numerous seeds which are used as spice.



Fig. No.1: *Nigella hispanica* L. Plant



Fig. No.2: *Nigella hispanica* L. Flowers



Fig. No. 3: *Nigella hispanica* L. fruit with seeds

#### Collection & Authentication of selected plant materials

The plant material *Nigella hispanica* L. was collected from Tirupati in Andhra Pradesh and authenticated by Dr. M. Niranjan Babu, Professor and Principal, Department of Pharmacognosy, Seven Hills College of Pharmacy, Tirupati.

**Extraction of seeds:** Seeds are collected and were powdered, to moderately coarse. The powdered parts of all the raw material were taken in 1 liter round bottom flask and extracted with ethanol by soxhlet extraction method.

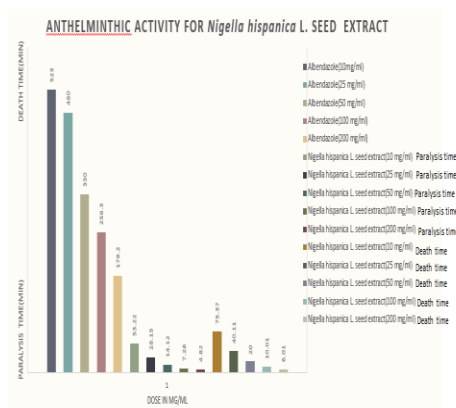
#### Screening for *In- vitro* anthelmintic assay:

The assay was performed *invitro* using Indian adult earthworm (*Pheretimaposthuma*) owing to its anatomical and physiological resemblance with the intestinal round worm parasites of human being for preliminary evaluation on anthelmintic activity. Earthworms were collected from

moist soil, obtained from agricultural fields nearby venkatramapuram, Tirupati, A. P, India and washed with distilled water to remove all the faecal matters which are used for the anthelmintic study. *In vitro* bioassay was carried out using 3 test groups of 6 earthworms approximately equal size 6-8 cm were released in to 25ml of solutions of albendazole, *Nigella hispanica* in the concentration ranging from 10 mg/ml, 25 mg/ml, 50 mg/ml, 100 mg/ml and 200 mg/ml on a petri-dish. Albendazole was used as reference standard (positive control) and acacia is used as negative control. All the test solutions and standard drug solution were prepared freshly before starting the experiment. Observations were made for upto 24 hours. Paralysis onset time and death time of individual worms were noted. Paralysis was said to occur when the worms show no movement on any sort except when the worms were shaken vigorously. Death was concluded when the worms lost their motility. Time of dead of worms were recorded after certain that neither move when shaken vigorously, when dipped in warm water 50°C and pricked with sharp needle. The paralysis and death time were calculated.

**RESULTS AND DISCUSSION:**

**Anthelmintic activity of the Extract:**



**Fig No. 4 Anthelmintic activity for *Nigella hispanica* L. seed extract and Albendazole**

An attempt has been made to carry out the anthelmintic studies on *Nigella hispanica* L. seed extract. The anthelmintic screening was carried out using the Indian adult earthworms *Pheretimaposthuma*, and the seed extract was compared with the standard drug albendazole, activity was studied for the paralysis and death time for upto 24 hrs. The results are given in the following table No. 1.

**Table No.1: Anthelmintic results for *Nigella hispanica* L. seed extract and Albendazole.**

Treatment	Dose (mg/ml)	Paralysis Time (Min.)		Death Time (Min.)	
		Mean	SD	Mean	SD
<i>Nigella hispanica</i> L. seed extract	10	53.22	0.68	75.37	0.47
	25	28.15	0.45	40.11	0.15
	50	14.12	0.36	20	0.1
	100	7.26	0.13	10.01	0.04
	200	4.82	0.18	6.01	0.02
Albendazole	10	523	1.36	-	-
	25	480	0.58	-	-
	50	330	0.44	-	-
	100	259.3	0.36	-	-
	200	179.2	0.36	-	-

All the studies were carried out for the 5 different concentrations of *Nigella hispanica* L. seed extract and Albendazole (10mg/ml, 25mg/ml, 50mg/ml, 100mg/ml, 200 mg/ml), distilled water was used as diluent and acacia as control. The paralysis time and death time was recorded for the 5 different concentrations of *Nigella hispanica* L. seed extract and Albendazole. From the experimental report it is clear that the *Nigella hispanica* L. seed extract showed stronger activity than that of the standard drug Albendazole..

## SUMMARY AND CONCLUSION:

The results have been proved that the herbal seed extract (i.e., *Nigella hispanica* L. seed extract) has shown effective anthelmintic activity even in low concentrations when compared with that of synthetic standard drug, Albendazole.

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