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ANTHELMINTIC ACTIVITYOF CRUDE EXTRACT OF *ADHATODA VASICA*

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ABSTRACT:

The crude extract of *Adhatoda vasica* was evaluated for establishing the claim of its anthelmintic potential and has shown good anthelmintic activity. Hydroalcohlic extract has exhibited anthelmintic activity in dose dependent manner giving competative time of paralysis and deaths when compared to the standard drug Albendazole. All the three concentration 25% and 50% and 100% of the crude extract of *Adhatoda vasica* showed paralysis time of 38.00±5.71, 50.00±10.70 and 73.33±9.39 min and death time of 71.33±32.87, 62.00±0.81 and 115.66±43.70 minutes for the 100%, 50% and 25% concentrations respectively.

KEY WORDS: Anthelmintic, Vasaka, Adult Indian earth worm.

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INTRODUCTION:

Helminthes are the most common infections in man, affecting a large proportion of the World's population. Parasitic diseases may cause severe morbidities[1,2]. Development of resistance to most of commercially available anthelmintic became a severe problem worldwide[3].

Vasaka is a medicinal plant and the leaves of *Adhatoda Vasica* has been reported to possess broad spectrum of medicinal properties such as anti-inflammatory property, antitussive effect, radio-modulatory influence, significant hepatoprotective effect and oils from the leaves have been found active against bacterial infections and has been considered as an official drug in Pharmacopoeia, 1994. The presence of alkaloids, tannins, flavonoids, cardiac glycosides in aqueous, methanolic, diethyl ether, chloroform and hydro-alcoholic extracts of this plant were reported by phytochemical tests; saponins were found to be present in methanolic, aqueous and hydro-alcoholic extract. Vasaka has been also used for a multitude of disorders including; bronchitis, leprosy, blood disorders, heart troubles, thirst, asthma, fever, vomiting, loss of memory, leucoderma, jaundice, tumors, mouth troubles, sore-eye, fever, and gonorrhoea. It is also useful in treating bronchitis, tuberculosis and other lung and Bronchiole problems.[4]

First botanically described as *Justicia adhatoda,* Species Plantarum, 1753, the plant was then redefined as *Adhatoda vasica* by Nees in 1831 the name by which it is normally known. It is also an approved drug which is mentioned in the India Pharmacopoeia (Pharmacopoeia of India, 1966). According to a survey in 2007 by National Medicinal Plants Board, Bangalore Foundation for Revitalisation of Local Health Traditions (FRLHT) on Demand and Supply of medicinal plants in India, listed *Adathoda vasica* under top 36 Medicinal Plant Species used in High Trade & consumed in volumes exceeding 100 MT per year. It is also planned under major medicinal plant species exported from India according to Handa, 1992. The demand of this significant plant is mostly met from the natural territory.[5] So, the present study attempts to evaluate anthelmintic activity of crude extract of *Zingiber officinale* against *Pheretima posthuma* earthworm.

MATERIALS AND METHOD:

Collection of Plant material:

The leaves of *Adhatoda vasaka* were collected from Uluberia,West Bengal in August 2018 and authenticated by S Deb Roy, Deptt. of Pharmacognosy, Bharat Technology, Uluberia.

Drying And Pulverisation:

Leaves were thoroughly cleaned with water and dried under shade for five to seven days until it became grindable. The dried leaves were grind with the help of electric grinder and separately preserved for further use. About 200gm of plant material was used for extraction.[6]

Preparation of extracts:

About 200g of the plant material was used for extraction. The extraction was done by using (60:40 Ethanol-Water) solvent in Soxhlet apparatus (Fig5). The extract was vacuum dried and stored in refrigerator at 4^{o}c for further use.

Evaluation of Anthelmintic Activity

Collection of earth worm

Indian earthworm, *Pheretima posthuma* were collected from the water logged area of soil, of Uluberia, Howrah, West Bengal. Indian adult earthworms (*Pheretima posthuma*) were used to study anthelmintic activity. They were washed with normal saline to remove all faecal matter. The earthworms of 5-8 cm in length and 0.2-0.3 cm in width were used for all experimental protocol.[7]

Anthelmintic Assay:

The Anthelmintic assay was carried as per the method of Singh *et.al.* with minor modification; Indian adult earthworms (*Pheretima posthuma*) of 5-8 cm in length and 0.2-0.3 cm width were used. The Worms were divided into 4 groups containing six earthworms in each group. 40 ml Preparation, containing three different concentrations (100%, 50%, and 25% distilled water) were prepared and Albendazole (the standard drug). The solutions were poured in different petridishes. Time for paralysis was noted when no movement observed except when the worms were shaken vigorously. Time of death of worms were recorded after ascertaining that the worms neither moved when shaken vigorously nor when dipped in warm water (50°C) Albendazole was used as reference standard while distilled water as control. Control sample was prepared using tween 80 in water.[8] The mean paralyzing time and death time were calculated and summarized in Table 1.

Statistical Analysis

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

RESULT AND DISCUSSION:

From the results it is clear that all the extracts exhibited potent anthelmintic activity at low concentration. Paralyzed time 38.00±5.7min, 50.00±10.70 min and 73.33±9.39min and death time 71.33±3min, 62.00in and115.6min for the extracts was decreases as the concentration increased from 100mg, 200mg and 400mg respectively where as the standard showed the paralysed time 34.66±1.69min and 76.0±1.63min at 400mg dose. From the result shown in the Table;1 hydroalcohlic extract of exhibited anthelmintic activity in dose dependent manner giving competative time of paralysis and deaths when compared to the standard drug Albendazole. The predominant effect of *Adhatoda vasica* on worm is to cause a flaccid paralysis and results in expulsion of the worm by peristalsis.

Table 1: Anthelmintic activity of *Adhatoda vasica*

Drug	Time in Minutes	
	Time for paralysis	Time for Death
Control	Nil	Nil
Adhatoda vasika 100%	38.00±5.71	71.33±32.87
Adhatoda vasika 50%	50.00±10.70	62.00±0.81*
Adhatoda vasika 25%	73.33±9.39*	115.66±43.70
Standard (400mg)	64.66±1.69	76.0±1.63*

#Control sample was observed for 12 hours but has shown no paralysis.

The result was expressed as Mean ± SEM. Statistical analysis was carried out using one way ANOVA followed by the student-t Test. P<0.05 was considered statistically significant.(n=3). * = p<0.01

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