

IN VITRO ANTHELMINTIC ACTIVITY OF CISSUS QUADRANGULARIS**Priyanka Yadav**

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ABSTRACT:

The present study deals with anthelmintic activity of stem of *Cissus quadrangularis* (vitaceae), It has been used by common men in India for promotion of fracture healing. *Cq* requires warm tropical climate and propagated by stem cuttings. The aqueous extracts were evaluated for its anthelmintic activity against adult indian earth worms (*Phertima posthuma*). Four concentrations (25, 50, 75, 100 mg/ml) of each extract were studied, which involved determination of time of paralysis and time of death of the test worms. It was found that aqueous extracts exhibited significant anthelmintic activity. Albendazole in same concentration as that of extract was used as standard reference and saline water as control.

Key words: *Cissus quadrangularis*, anthelmintic activity, *pheritima posthuma*, Albendazole.

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INTRODUCTION

Soil-transmitted helminthiasis (STH) is one of the diseases caused by different species of parasitic worms which affect the population spread worldwide irrespective of the cast, creed and ages of the hosts. Infections by helminths are very common in the human beings in all the countries of the globe (1,2). In India also diseases caused by helminths intensify during rainy season/ wet season affecting animals/ cattle and the intensity of this disease even shoots up by 100 percent. The drugs used are called anthelmintic and/ or antihelminthic which remove the parasitic worms from the body either by stunning (vermifuges) or by killing (vermicides) (2,3). The World Health Organization the specialised agency of the, United Nation, Rome, has reported that only synthetic drugs are being frequently used in the treatment of attacks by helminths in human population; however, such medicines are so costly that they are out of reach of millions of people. Further these medicines also have side effects in the human body (3). Considering the above facts of high cost scarce availability as well as their side effects, an attempt has been made to try out anthelmintic herbal drugs like *Cissus quadrangularis* linn (*Cq*)(2,3,4).

Cissus quadrangularis, also known *Vitis quadrengularis*, belongs to the family *vitaceae* (5). It has been used by the common people in India for promotion of fracture healing. *Cq* requires warm tropical climate and is propagated by stem cuttings (6,7). Various researches concluded that *Cq* shows the presence of various constituents such as flavonoids, triterpenoids, Vitamin C, stilbene derivatives, triterpenes, sitosterol, ketosteroid, glycoside, alkaloid etc. In 'Ayurveda' it has been used in the treatment of irregular menstruation, asthma and dyspepsia. It is also used as a digestive tonic and analgesic in diseases of the eyes and ears (8,9).

Aqueous extract of this plant is highly effective and gives Analgesic, antiulcer, antiviral, sedative and anticonvulsant effects. In the present study an attempt has been made to isolate Tannins from aqueous extract of *Cq* stem and to evaluate *invitro* anthelmintic activity (10).

PLANT MATERIAL

The stem of plant *Cq* Purchased from local market of Jabalpur, were identified and authenticated by Head of the Department of Crop and Herbal Physiology of JNKVV.

EXPERIMENTAL WORMS

All the experiments were carried out with Indian adult earthworms (*Pheretima posthuma*) due to their anatomical resemblance with the intestinal roundworm parasites of human beings. They were collected from moist soil and washed with water to remove all faecal matters.

PREPARATION OF EXTRACT

Cq were collected in the month of November and dried in shade. The powder of *Cq* was subjected to successive solvent extraction using Soxhlet apparatus. The powder extracted with water extract was filtered through No. 4 Whatman filter paper. The extract was evaporated at 40°C to dryness.

QUALITATIVE PHYTOCHEMICAL ANALYSIS

The aqueous extract of *Cq* stem was subjected to qualitative phytochemical tests for different constituents such alkaloid, saponins, tannins, triterpenoids, phenols, proteins, carbohydrates, glycosides, steroids, fixed oils.

Sl.No.	Type of constituents	Result
1.	Alkaloids	+
2.	Saponins	+
3.	Tannins	+
4.	Triterpenoids	+
5.	Phenols	+
6.	Proteins	+
7.	Steroids	-
8.	Glycosides	+
9.	Fixed oils	-

ADMINISTRATION OF ALBENDAZOLE

Albendazole (25,50,75 & 100 mg/ml) was prepared by using 0.5% w/v of CMC as a suspending agent and administered as per method of extract.

ADMINISTRATION OF EXTRACT

The aqueous extracts of Stem *Cq* of different concentrations (25, 50, 75, 100 mg/ml) were prepared by using 0.5% w/v of CMC as a suspending agent and final volume was made up to 10 ml for respective concentrations. Albendazole was used as standard. Groups of approximately equal size worms consisting of two earthworms individually in each group were released into in each 10 ml of desired concentration of the drug and extracts in the Petri dish.

EXPERIMENTAL DESIGN

The anthelmintic activity was performed according to the method [11] on adult Indian earth worm *Pheretima posthuma* as it has anatomical and physiological resemblance with the intestinal round worm parasites in human beings. *Pheretima posthuma* was placed in petri dish containing four different concentrations (25, 50, 75 & 100 mg/ml) of aqueous extract of stem of *Cq*. Each petri dish was placed with 2 worms and was observed for paralysis or death. Mean time for paralysis was noted when no movement of any sort could be observed, except when the worm was shaken vigorously; the time death of worm (min) was recorded after ascertaining that the worms neither moved when

shaken nor when given external stimuli. The test results were compared with Reference compound Albendazole (25, 50, 75 & 100 mg/ml) treated samples (12, 17).

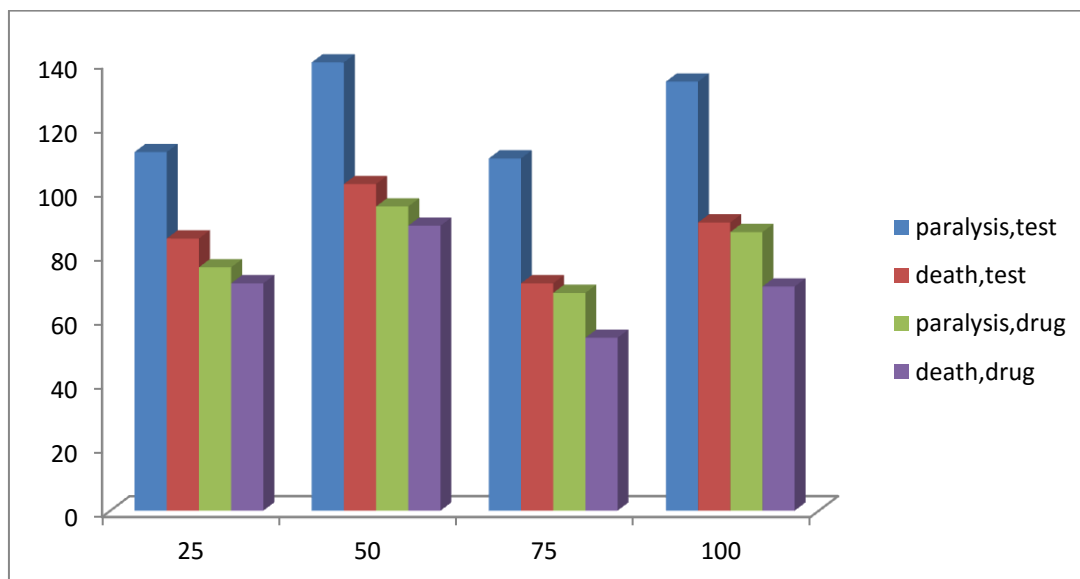
RESULT AND DISCUSSION

Preliminary phytochemical analysis of aqueous extracts showed the presence of alkaloid saponins, tannins, triterpenoids, phenols, proteins, steroids, glycosides & Fixed oils. The data revealed that the aqueous extract at 100 mg/ml concentration shows paralysis in 24 min and death in 45 min, of the earth worm *Pheretima posthuma* (12). The other test concentrations of both the extracts showed marked degree of anthelmintic activity. The anthelmintic effect of extracts is comparable with that of the effect produced by the standard drug albendazole. Albendazole exhibits anthelmintic activity by blocking glucose uptake and depletion of glucose store in test parasite (13). Phytochemical screening of the extracts revealed the presence of various phytoconstituents like tannin. These are chemically polyphenolic compounds (15) which were shown to produce anthelmintic activities (13, 14). Reported anthelmintic effect of tannins, can bind to free proteins in the gastrointestinal tract of the host animal (16) or glycoprotein on the cuticle of the parasite and may cause death. In this investigation, it was identified that the possible phytoconstituents were responsible for anthelmintic activity. (6)

CONCLUSION

Present studies had concluded that stem *Cq* showed the presence of various phytoconstituents which were responsible to give anthelmintic activity and confirmed the traditional anthelmintic activity of *cissus quadrenularis*.

Treatment	Conc. (mg/ml)	Paralysis time (min)	Death time (min)
Aqueous extract	25	112	140
	50	85	102
	75	76	95
	100	71	89
Albendazole	25	110	134
	50	71	90
	75	68	87
	100	54	70



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