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## Investigation of Phytochemical Screening and *In-Vitro* Anthelmintic Activity of *Zaleya decandra* (L)



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### ABSTRACT

The aim of the present study was to explore the phytochemical screening and *in vitro* anthelmintic activity of *Zaleya decandra* (L). Extract of *Zaleya decandra* was taken for anthelmintic activity against Indian earthworm *Pheretima posthuma*. Various concentrations of aqueous extract was evaluated (20, 30, 40, 50mg/ml). Albendazole drug was used as standard drug. Albendazole causes death of the parasite. The results were expressed in terms of time taken for paralysis as well as death of *Pheretima posthuma*. At 50mg/ml the extract exhibited maximum potential when compared to albendazole.



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## INTRODUCTION

The plant *Zaleya decandra* is commonly called as Purslane (English) belongs to family aizoaceae. It is an annual branched, succulent herb in India [1]. The complete morphological and taxonomical description of the plant *Zaleya decandra* given by [2]. It is cultivated in open places [3]. *Zaleya decandra* and its species are used for antidiabetic [4], anti-inflammatory, antihyperglycemic, hepatoprotective, antioxidant and diuretic.

Medicinal plants are a source of great economic value in Indian continent. Nature is an important source of medicines. Medicinal plants constitute main sources of pharmaceuticals and health care products and nutraceuticals. Many ancient nations awakened to the importance of herbal medicine which brings more cures[5]. The use of medicinal plants is to treat and prevention of many health problems such as edema, diarrhea, malaria and bacterial and viral infections and also used to maintain good health[6]. Medicinal plants are playing an important role in the growth and development of mankind. Herbal drugs have been used in traditional systems of medicines, since immemorial in different parts of the world. The medicinal plants provide cost effective, easily available alternative medicines with least or no side effects [7].

Helminthic infections are large threat to human beings health in developing countries and developed countries. The World Health Organization (WHO) reveals that over two people are suffering from parasitic infections due to worms [8]. Intestinal infections with worms can more easily treat than those infections that occur in other locations in the body [9].

In ethnomedicine, at least 80% of the world's population in developing countries uses plant materials as their source of primary health care [10].

Earthworms have been used widely for the initial evaluation of anthelmintic compound *in vitro* [11-14].

## MATERIALS AND METHODS

### Plant collection and identification

The leaves of *Zaleya decandra* were collected in the month of June from Narsapur, Medak Dist. of Telangana, India. The plant was authenticated by D.Venkateshwara Rao, Deputy Director, Telangana. Forest Academy, Dullapally, Hyderabad, Rangareddy District.

### Worms collection

Anthelmintic assay was performed on Indian earthworm *Pheretima posthuma*. Because of, easy availability the Indian earthworms (*Pheretima posthuma*) were collected from the waterlogged areas of the soil and removes all the earthy matter with water. The earthworms of 3-6 cm in length and 0.1-0.2 cm in width were used for experimental protocols. The earthworms have anatomical and physiological resemblance with the intestinal roundworm parasites of human beings [15, 16].

### Chemicals and drugs used

Albendazole, Carboxy Methyl Cellulose (CMC), Water, Saline were used during the investigation of anthelmintic activity.

### Phytochemical screening

The aqueous extract of *Zaleya decandra* was subjected to phytochemical screening to identification of carbohydrates, proteins, glycosides, alkaloids, tannins, amino acids and lignin [17].

### Preparation of plant extract

The leaves were collected and dried in shade and powdered by using pulveriser. It was passed through the sieve no 20 to get a coarse powder. The weighed quantity of plant powder was extracted with water (aqueous extraction) followed by maceration for 72 hours. Then the extract was subjected to distillation to separate solvent from the extract. Finally, the extract was used for evaluation of anthelmintic activity.

### Preparation of concentrations

Aqueous extract of *Zaleya decandra* (20, 30, 40, 50mg/ml concentrations) were prepared by dissolving of normal saline. Albendazole was prepared by using 0.5%w/v of Carboxy Methyl Cellulose (CMC) as suspending agent.

### Evaluation of anthelmintic activity

The anthelmintic activity was carried out according to the method [18]. The Indian earthworm (*Pheretima posthuma*) was placed in petri dish containing four different concentrations (20, 30, 40, 50mg/ml) of aqueous extract of *Zaleya decandra*. Albendazole was used as a standard drug and observed for paralysis and death of worms. The lethal effect of Albendazole was attributed to its inhibition of tubulin polymerization and blocking glucose uptake [19]. Time for paralysis was noted when no movement of any sort could be observed except when worms were shaken vigorously. Death was concluded when the worms lost their motility [20, 21]. The results were compared with standard reference drug Albendazole treated samples.

### RESULTS AND DISCUSSION

Preliminary phytochemical screening of *Zaleya decandra* indicates presence of carbohydrates, alkaloid, flavonoids, proteins and amino acids. Aqueous extract of *Zaleya decandra* shows significant effect on *Pheretima posthuma*. Higher concentrations of *Zaleya decandra* extract produce paralytic effect much earlier and time taken for death was shorter. It shows maximum efficacy at 50mg/ml concentration than the standard drug (Albendazole) (Table 2).

**Table no 1: Phytochemical screening of leaves extract of *Zaleya decandra*.**

Constituents	Aqueous extract
Carbohydrates	+
Amino acids	+
Glycosides	+
Proteins	+
Tannins	+
Flavanoids	+

Note: + (present) - (absent)

Table no 2: Anthelmintic activity of aqueous extract of *Zaleya decandra* and standard Albendazole.

Extract	Concentrations (mg/ml)	Pheretima posthuma	
		Paralysis(min)	Death(min)
Aqueous extract	20mg/ml	41±1.34	44±0.18
	30mg/ml	36±0.94	39±0.62
	40mg/ml	30±.09	35±0.57
	50mg/ml	20±0.61	24±0.99
Albendazole	20mg/ml	40±0.43	43±1.38
	30mg/ml	35±0.60	39±0.59
	40mg/ml	31±0.81	35±1.38
	50mg/ml	22±1.4	25±0.92



A) 20mg/ml



B) 30mg/ml



C) 40mg/ml



D) 50mg/ml

## CONCLUSION

It can be concluded that the aqueous extract of *Zaleya decandra* has shown significant anthelmintic activity when compared to Albendazole against Indian earthworm *Pheretima posthuma*.

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