



## EVALUATION OF ANTHELMINTIC ACTIVITY OF *CARALLUMA ADSCENDENS* VAR. *FIMBRIATA*



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### Abstract

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The plant *Caralluma adscendens* is an edible succulent vegetable traditionally it is use as Anti-obesity, appetite suppressant, anthelmintic, anti-inflammatory, antirheumatic, CNS stimulant and leprosy. Naturalized throughout the hot and moist parts of India. In this first stems are subjected to pet.ether, chloroform, methanol and aqueous solvent respectively for extraction. And the in vitro evaluation of anthelmintic activity was done against *Pheretima posthuma* (Annelida), *Ascardia galli* (nematode). Aqueous extract of stems of *Caralluma adscendens* was found to be most effective as anthelmintic as compare to other.

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## INTRODUCTION

Helmenthiasis is prevalent globally, but is more common in the developing countries with poorer personal and environmental hygiene. In the human body gastrointestinal tract is the abode of many helminthes, but some also live in tissue. They harm the host by deriving him of food, causing blood loss, injury to organs, intestinal or lymphatic obstruction and by secreting toxins<sup>1</sup>. Many humans harbor helminthes (worms) of one species or another. In some cases infection result many in discomfort and do not cause substantial ill health, and example being thread worm in children other worm infections, such as cytosomiasis (Bilharzias) and hook worm disease, can produce very serious morbidity<sup>2</sup>. Infections with helminthes or parasitic worms, affect more than two billion people world wide<sup>3</sup>. It is among the most important animal diseases inflecting heavy production losses. The disease is highly prevalent particularly third world countries<sup>4</sup>. Chemical control of helminthes coupled with improved management has been the important worm control strategy throughout the world. However, the world wide increasing resistance of gastrointestinal

trichostrongylids of domestic small ruminants against conventional and anthelmentis<sup>5, 6</sup>. The resulting economical damage demonstrated the urgent need for alternative method to reduce the worm burden in an animal. Plants have been used from ancient time to cure diseases of man and animals. The systematic therapy is commonly referred as urani, folk, eastern or indigenous medicine in India and Pakistan<sup>7</sup>. Helminthes infections are prevalent in people all over the world, but most common in the tropical and subtropical regions. The World Health Assembly, in a number of resolution has emphasized the need to the use of natural products with therapeutically proven efficacy particularly in patients residing in tribal areas who are very much prone to attack of several infections due to lack of knowledge about proper sanitation. Search for anthelmintic factor in plants therefore remains a potential area of investigation<sup>8</sup>. Hence this study is undertaken to evaluate anthelmintic activity of plant *Caralluma adscendens*.

Caralluma, a cactus plant belongs to family Asclepiadaceae is a succulent, perennial herb, grow to a height of 1 to 10

ft and grow in different regions of India. These plants may be grown outdoors in the warmer and drier parts, or in greenhouses and window gardens. A genus of almost leafless, succulent ornamental, resembling cacti and perennial, branched herbs. About 12 species occur in India. It is a very variable herb, up to 1m in height. There are approximately 100 variable species in the genus.<sup>9</sup> It having antibacterial<sup>10</sup>, Antioxidant<sup>11</sup>, Hypolipidemic<sup>11</sup>, Appetite suppressant<sup>12</sup>. The key Phytochemical Constituents of the herb are Pregnane Glycosides, Flavone Glycosides, Megastigmane Glycosides, Bitter Principles and Saponins, alkaloides, sterols and a hydrocarbon n-pentatriacontane.<sup>13</sup>

## MATERIALS & METHODS

### COLLECTION AND AUTHENTICATION

The stems of *Caralluma Adscendens* var. *fimbriata* was collected during the month of July, from Local area of Dhule, Maharashtra, India, 2010. The fresh stems were separated, cleaned and dried at room temperature in shade and away from direct sunlight. Dried stem material was coarsely powdered using mechanical grinder. The plant authenticated by Dr. P. G. Diwakar,

scientist "E" Botanical Survey of India, Koregaon Road Pune, by comparing morphological features and a sample voucher specimen of plant was deposited for future reference (Voucher specimen number FN-1 and Reference no: BSI/WRC/Tech./2010/422).

### Preparation of extract

The stem of *Caralluma adscendens* were collected and dried in the shade and then pulverized in a grinder. The powdered drug was utilized for extraction. Material was passed through 120 meshes to remove fine powders and coarse powder was used for extraction. A method described in Mukherjee was used for extraction of powdered plant. Extraction was done by Pet. Ether, Chloroform, Methanol, and Aqueous.<sup>14</sup>

### Preliminary phytochemical screening

The extracts were then subjected to preliminary phytochemical screening to detect the presence of various phytoconstituent. The results shows that petroleum ether extract contain steroids, the chloroform extract contain steroids and alkaloids, the methanolic extract contain Steroids, Saponins, Alkaloids, Glycosides,

Flavonoids, Tannins, Carbohydrates, Proteins and aqueous extract contain Saponins, Glycosides, Flavonoids, Tannins, Carbohydrates, Amino acids.<sup>15</sup>

### Animal selection

*Pheretima posthuma* (Annelida), Commonly known as earthworm collected from the water logged areas and *Ascardia galli* (nematode) worms were obtained from freshly slaughtered fowls (*Gallus gallus*). Both the worm types were identified at S.S.V.P.S. College, Dhule.

### Evaluation of AnthelmIntic activity

The assay was performed on adult Indian earthworm, *Pheretima posthuma* due to its anatomical and physiological resemblance with the intestinal round worm parasite of human beings. Because of easy availability, earthworms have been used widely for initial evaluation of anthelmintic compounds *invitro*. *Ascardia galli* worms are easily available in plenty from freshly slaughtered fowls and their use, as a suitable model for screening of anthelmintic drug was advocated earlier. Fifty milliliter of solution containing three different concentrations, each of crude extract (10, 50 and 100 mg/ml) were prepared and six

worms (same type) were placed in it. Time of paralysis was noted when no movement of any sort could be observed except when the worms were shaken vigorously. Time for death of worms was recorded after ascertaining that worms neither moved when shaken vigorously nor when dipped in warm water (50 °C). Piperazine citrate (10 mg/ml) was used as reference standard while distilled water as control.<sup>16</sup>

### RESULTS AND DISCUSSION

The alcoholic extract and aqueous extract of stems of *Caralluma Adscendens var. fimbriata* elicitate a significant anthelmintic activity at higher concentrations. Both the extracts exhibited anthelmintic activity in dose dependant manner giving shortest time of paralysis (P) and death (D) with 100mg/ml concentration, for both types of worms. The alcoholic extract of stems of *Caralluma Adscendens var. fimbriata* caused paralysis in 10min and death in 28min, while aqueous extract showed paralysis in 9min. and death in 31min. against the p. posthuma. The reference drug piperazine citrate showed the same effect at 22min. for paralysis and 61min. for death.

The alcoholic and aqueous extract has showed significant anthelmintic activity against ascardia galli worms. The alcoholic extract caused paralysis in 7min, death in 29min. and aqueous extract exhibited P and D in 7 and 28 min. respectively, at higher cocentrations of 100mg/ml. The piperazine

citrate has shown the same activity at 12 and 43 min. The anthelmintic activity of both the extracts of stems of *Caralluma Adscendens var. fimbriata* has elicited the significant activity comparable as that of standard drug piperazine citrate.

**Table 1**

**Anthelmintic activity if alcohol and aqueous extract of stems of *Caralluma Adscendens var. fimbriata***

Test subs	Concentration (mg/ml)	P. Posthuma	P.Posthuma	A. galli	A. galli
		P	D	P	D
Control	-	-	-	-	-
Alcohol extract	10	23±0.57	63±0.57	19±0.60	48±0.42
	50	16±0.49	55±0.88	16±0.36	44±0.60
	100	10±0.47**	28±0.60**	7±0.55**	29±0.55**
Aqueous extract	10	25±0.47	67±0.47	17±0.49	49±0.66
	50	18±0.66	56±0.57	13±0.36	44±0.60
	100	9±0.42**	31±0.47**	7±0.36**	28±0.42**
Piperazine citrate	10	22±0.49	61±0.65	12±0.42	43±0.47

[Time taken for paralysis (P) and death (D) of worms in minutes]

Results are expressed as mean ± SEM from six observations.

\*\* i.e. significant value.

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