



Anthelmintic Activity Of The Crude Alkaloid Extracts Of *Eichhornia Carssipes* Roots From Dantarmakki Kere Of Chickmagalur

Prathima Mathias D. A.

Associate Professor, Department of PG studies in Industrial Chemistry and Chemistry,
Sir M.V. Government Science College, Bommanakatte, Bhadravathi 577 302, Shivamogga, Karnataka,
India.

Abstract: *Eichhornia carssipes* commonly known as water hyacinth has been reported to be a wild water weed and possess detoxification effect. Few reports have shown the extracts of the plant to possess antifungal and antibacterial activities. In this paper we are for the first time reporting the anthelmintic activity of three alkaloids extracts and four non-alkaloid extracts. The three alkaloid extracts were obtained by three different methods which were different in appearance and yield. The results were promising and discussed in this paper.

Index Terms - *Eichhornia carssipes*, alkaloids, anthelminthic activity, roots.

I. INTRODUCTION

Intestinal round worms (nematodes) are mainly responsible for the helminth infections among children. The common round worm, pin worm, whip worm, thread worm, hook worm are a few among them. Helminthiasis is treated by administering broad spectrum drugs like Albendazole¹, Mebendazole, Thiabendazole, Pyrantel pamoate, Piperazine, Niclosamide, Diethyl carbamazine, Ivermectin, Bithionol ... etc. The anthelminthic drugs are found to act on the parasite either by paralyzing the worm or damaging the worm leading or partial digestion or rejection by immune mechanisms or by interfering with the metabolism of the worm. Reports of adverse effects 2-4 like epigastric pain, diarrhea, nausea, head ache and insomnia, yatic cyst and cysticercosis, alopecia, increased liver enzymes, pancytopenia, hypersensitivity reactions, agranulocytosis, pruritus, psychoneurotic symptoms, irreversible liver failure, fatal Stevens-Johnson syndrome, rash, epilepsy, retinal hemorrhage, Mazotti reaction (fever, headache, dizziness, somnolence, hypotension, tachycardia, peripheral edema etc.). In the era of investigation of medicinal plants for various ailments, India is lacking behind in giving a suitable natural product remedy for helminth infections (human or pets). In our present work we are reporting the best out of waste strategy. *Eichhornia carssipes* commonly known as water hyacinth is the contaminant found in most of ponds and water bodies. Many reports are found on its use as biodiesel, manure,

fertilizer, heavy metal absorbant²⁻⁴, antifungal⁵⁻⁹, etc. No reports on its anthelmintic properties were found and hence chosen for study. The area of our work was Dantaramakki pond (Kannada = kere) of Chickmagalur, which is free from industrial effluents (chemical tests have been performed) and hence the contamination by heavy metals was not detected. Three methods for the isolation of alkaloid extracts were adopted and their activity studied.

II. MATERIALS

Earth worms, petri dishes, beakers, measuring cylinders, standard drugs (piperazine citrate and albendazol), glass rods and stop watch.

The earth worms were procured from Chickmagalur during the time of experiment. The worms were washed cleanly to remove adhering materials and were sorted out for uniform size and length. The worms were acclimatized before experimentation.

III. METHOD

a) Extraction:

Method -1 : Alkaline extraction followed by ether extraction.

Method-2 : Acidulated water extraction followed by neutralization.

Method 3: Alkaline extraction followed by chloroform extraction.

Table 1 : List of codes for **root** extracts of *Eichhornia carssipes*

METHOD	FRACTION	COLOUR, YIELD & CONSISTENCY	CODE
Method-1	Ether soluble	Deep red, oily, 50 mg	R ₁
	Ether insoluble	Dark brown, amorphous, 42.31g	R ₂
Method-2	Neutralized residue	Greenish brown, amorphous, 0.701 g	R ₃
	Neutralized filtrate	White brown, amorphous, 9.426 g	R ₄
Method-3	Chloroform soluble	Brown, amorphous, 50 mg	R ₅
	Chloroform insoluble	Light brown, amorphous, 0.948	R ₆
	Middle fraction	Light yellow, amorphous, 20 mg	R ₇

b) Anthelmintic activity

Slightly modified Gaind et. al. technique was adopted. The time for paralysis (hot water test) and for death were recorded. The experiment was repeated three times to get mean time (in minutes) for paralysis and death.

IV. **RESULT**Table-2: Anthelmintic activity of the crude extracts of **roots** of *Eichhornia carssipes*

Sl. No.	Drug	Dose	Paralysis time (min)	Death time (min)
1	R ₁	2.5 mg/mL	1	3
2	R ₂	10 mg/mL	60	-
3	R ₃	10 mg/mL	25	-
4	R ₄	10 mg/mL	30	60
5	R ₅	2.5 mg/mL	33	7
6	R ₆	10 mg/mL	55	-
7	R ₇	10 mg/mL	59	-
8	Standard (Piperazine citrate/Albendazole)	10 mg/mL	80 / 53	105 / --
9	Control	---	---	---

V. **DISCUSSION**

The earth worm move by ciliary motion. Its outermost layer is mucilaginous and composed of polysaccharides that enable it to move. Damage to mucopolysaccharide membrane will expose the outer layers and restricts its movement causing death. The anthelmintic activity of the alkaloid extracts of the root (R₁ and R₅) at minimum concentration of 2.5 mg mL⁻¹ can be attributed to the same.

VI. **CONCLUSION**

If Water Hyacinth is grown in uncontaminated water bodies, their alkaloid extracts can be used for treating helminthes. Further purification and isolation of single component may lead to a new anthelmintic drug from world's most troublesome weed.

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