



Extraction Of Alkaloids From Tubers Of *Eichhornia Carssipes* Grown In Dantarmakki Kere Of Chickmagalur And Their Anthelmintic Activity

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Abstract: The water insoluble alkaloid extracts of the tubers of water hyacinth were extracted and tested for their anthelmintic properties. The anthelmintic activity was carried out against *Pherithuma posthuma* with 50 mg dose of the crude alkaloid sample. The aqueous extracts were also tested for potential activity against helminthiasis. The results are discussed in this paper.

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

I. INTRODUCTION:

Eichhornia carripes commonly known as Water Hyacinth, is an aquatic plant native to the Amazon basin, and is often considered as a highly problematic invasive species outside its native range. Water Hyacinth is one of the world's most abnoxious water weeds when not controlled. The plant is known for its well ability to grow in severely polluted water. A large number of biologically active compounds have been extracted from this weed. Fresh plant is reported to contain HCN, alkaloid, triterpenoid and may induce itching. Plants sprayed with 2,4-D may accumulate lethal doses of nitrates as well as various other noxive elements in polluted environment. Because of its extremely high rate of development, *Eichhornia carssipes* is an excellent source of biomass. The roots of *Eichhornia* naturally absorb pollutants including lead, mercury and strontium-90, as well as some organic compounds believed to be carcinogenic. Water Hyacinth is usually cultivated for waste water treatment^{1- 12}. Literature survey reveals that the plant under investigation has been reported to be helpful in debilities like vitiated pitta, swelling, goiter, burning sensation, hemorrhage and general debility. The flowers are used for medicating the skin of horses and are a tonic. The abundant availability of the plant material with short life cycle was the best option for a promising anthelmintic, the study about which has been neglected in recent years. Care however was taken to select healthy plants for normal aquatic life containing pond system (Dantaramakki Kere of Chickmagalur). The materials, method and results are discussed below.

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 **tubers** extracts of *Eichhornia carssipes*

METHOD	FRACTION	COLOUR, YIELD & CONSISTENCY	CODE
Method-1	Ether soluble	Yellow, amorphous, 50 mg	T ₁
	Ether insoluble	Black brown, amorphous,	T ₂
Method-2	Neutralized residue	Black brown, amorphous, 0.624 g	T ₃
	Neutralized filtrate	Yellow brown, amorphous, 7.877 g	T ₄
Method-3	Chloroform soluble	Yellow, amorphous, 50 mg	T ₅
	Chloroform insoluble	Ash, amorphous, 1.866 g	T ₆

b) Anthelmintic activity

Slightly modified Gaiind 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 **tubers** of *Eichhornia carssipes*

Sl. No.	Drug	Dose	Paralysis time (min)	Death time (min)
1	T ₁	2.5 mg/mL	2	7
2	T ₂	10 mg/mL	45	-
3	T ₃	10 mg/mL	30	-
4	T ₄	10 mg/mL	40	-
5	T ₅	2.5 mg/mL	3	8
6	T ₆	10 mg/mL	45	-
7	Standard (Piperazine citrate/Albendazole)	10 mg/mL	80 / 53	105 / --
8	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 (T₁ and T₅) 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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REFERENCES

- [1] Nina L. Etkin, 1992, *Medical Anthropology Quarterly*, Vol 6, Issue 2, pages 99–113.
- [2] Ursula Steiger MD, Jacques Cotting MD and Jürg Reichen MD Berne, 1990, *Clinical Pharmacology and Therapeutics*, Vol 47, pp 347–353.
- [3] V. Rajshekhar, 1998, *Acta Neurologica Scandinavica*, Vol 98, Issue 2, pages 121–123.
- [4] Rafael Igual-Adell, Carlos Oltra-Alcaraz, Enrique Soler-Company, Pilar Sánchez-Sánchez, Josefa Matogo-Oyana and David Rodríguez-Calabuig, 2004, *Expert Opinion on Pharmacotherapy*, Vol. 5, No. 12, Pages 2615-2619.
- [5] S. Muramoto and Y. Oki, 1983, *Bulletin of Environmental Contamination and Toxicology* Vol 30, Issue 1, pp 170-177.
- [6] J.N Nigam, 2002, *Journal of Biotechnology*, Vol 97, Issue 2, pp 107–116.
- [7] Kaustubha Mohanty, Mousam Jha, B.C. Meikap and M.N. Biswas, 2006, *Chemical Engineering Journal*, Vol 117, Issue 1, pp 71–77.
- [8] Fareed MF, Haroon AM and Rabeh SA, 2008, *Pakistan Journal of Biological Sciences*, Vol 11, Issue 21, pp 2454-2463.
- [9] Vivot Eduardo, Muñoz Juan de Dios, Herrero Isidro, Dragán Analía and Sequin Christian, 2006, *Pharmacologyonline* Vol 3, pp 845-849.
- [10] S. K. Gupta and A. B. Banerjee, 1972, *Economic Botany*, Vol 26, Issue 3, pp 255-259.
- [11] R. R. Upadhyay S. N. Dixit, S. C. Tripathi, 1976, *Economic Botany*, Vol 30, Issue 4, pp 371-374.
- [12] Thamaraiselvi, P. Lalitha and P. Jayanthi, 2012, *Asian Journal of Plant Science and Research*, Vol 2, issue 2, pp 115-122.