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# Pharmacognostic and preliminary phytochemical screening of *Ctenolepis gracinii*

**John Soosamma[1*], Babu Ramesh [1], Madhavi T[1], Bincy Raj[2].**
1, East Point College of Pharmacy,Bangalore- 560049.
2, Dayananda Sagar College of Pharmacy, Bangalore-560078.

## Abstract

The study is aimed at development of physicochemical parameters and to investigate the active principle present in *Ctenolepis gracinii* Burm.f.),(Cucurbitaceae). Atkinson says the fruits ,seeds and roots are used in medicine. This species as being used by the Tamils as a treatment for quinsy and other throat disorders. From extensive literature survey it was revealed that no reports were available on microscopic evaluation, standardization parameters of *Ctenolepis gracinii* to check the identity and purity of the drug. The present work comprises the investigations carried out to establish methods for quality control of drugs, botanical evaluation which comprises of macroscopy, physiochemical parameters like loss on drying, extractive values, Ash values and to investigate the phytochemicals present in the extracts in the preliminary level with respect to thin layer chromatography were also carried out for the quality control of the drug. Thus it was thought worthwhile to explore this endangered plant on the basis of it's standardization parameters .The study will provide referential information for the correct identification of the crude drug.

Keywords: *Ctenolepis gracinii*, *Blastania gracinii*, *Bryonia garcinii*, *Zehneria garcinii*,*Sicyos garcinii*, Cucurbitaceae

## Introduction

Plants are slender monoecious annual climbing tendrils which is indigenous to Burma, distributed in Southern India and Ceylon and occasional in dry deciduous forests[1,2]. Vernacularly called as Mossumossuke, Mochumochukay in Ceylon and Gudimuralu in Telugu[3]. Other synonyms of the plant are *Blastania garcinii, Bryonia garcinii,Zehneria garcinii,Sicyos garcinii*[4,5,6,7]. Climbing, stems slender, elongate, striate, branched, glabrous, tendrils capillary, leaves membranous, 2.5- 5 cm long and broad at first hirsute, afterwards scabrid deeply 3-5 lobed, the lobes usually obovate, obtuse or acute ,constricted at the base, denticulate or crenulately toothed, the intermediate lobe scarcely longer than the others, mucronate, petioles 1.3-3.8cm long, slender, striate, shortly hirsute , at length scabrid. Stipular bracts 4-8mm long, ovate shortly hairy, fringed on the margin with long filiform cilia. Male flowers yellowish white, 3-4 at the apex of a slender peduncle less than 13 mm long ; pedicels 1-2mm long. Female flowers solitary on very short peduncles. Fruit broader than long, 4-6 by8-10 mm, bright red, glabrous inversely subreniform or hammer shaped. Seeds 6-8 by 3mm, oblong, yellowish grey, rounded at the apex, slightly attenuated at the base, with a deep pit on one face, convex on the other, the edge thick and obtuse[8,9,10]. Atkinson says the fruits, seeds and roots are used in medicine. This species as being used by the Tamils as a treatment for quinsy and other throat disorders[3].

*** Corresponding Author:**
E-mail: soosammajohn7@gmail.com

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## Material and methods

The plants of *Ctenolepis garcinii* was collected from Trichi (Tamil Nadu ,India) were identified by the botanist at Regional research Institute Bangalore. The plant was morphologically examined for shape of leaf, apex, base, margin etc. The leaves are separately dried in shade and preserved in air tight containers. The coarsely powdered dried leaves were used for the phytochemical screening and physical evaluation. The transverse sections of leaf was treated with Phloroglucinol- Hydrochloric acid solution , Glycerin and Iodine solution to determine the various tissues[11].The physical constants like Ash value, Alcohol and water soluble extractive value, Moisture content were also determined . The leaves were extracted with Chloroform, methanol and the extracts were subjected to percentage yield calculation and phytochemical screening.

### Pharmacognostical studies

Morphological studies were carried out by using simple determination technique, shape, size, colour, odour of the leaf. Microscopical studies were carried out by preparing a thin hand section of the leaf of *Ctenolepis garcinii*. The section was cleared with chloral hydrate and was stained as per the protocol. Histochemical reactions were applied with Con.Hcl and phloroglucinol and were mounted in glycerin for identification of lignified elements.

### Physicochemical parameters

The parameter was done to evaluate the percentage of total ash as per Indian Pharmacopoeia. Extract of the powdered leaf was prepared with different solvents for the study of extractive value.

### Preliminary phytochemical Analysis

For preliminary phytochemical analysis, extract was prepared by weighing 500 gm of the dried powdered leaves and were subjected to hot successive continuous extraction with different solvents as per the polarity, methanol, chloroform and finally with water. The extracts were filtered in each step, concentrated and the solvent was removed by rotary evaporator. The extracts were dried over dessicator and the residues were weighed. The presence or absences of the primary and secondary phytoconstituents were detected by usual prescribed methods.

### Ash value

Dried leaves were incinerated to determine the ash content.

### Extractive values

Alcohol soluble extractive value

Accurately weighed 5 gm coarse and air dried drug material was macerated with 100ml ethanol (99%) in a stoppered flask for 24 hrs. with frequent shaking for 6 hrs. It was then filtered rapidly through filter paper taking precautions to prevent excessive loss of ethanol. The volume was made up to 100ml with ethanol. The residue was evaporated in a flat bottom shallow dish, dried at $105^0$C, weighed and kept in a desiccator. Average extractive value in percentage w/w (on dry basis) was calculated with reference to air dried drug (Table II).

### Water soluble extractive value

5 gm coarse and air dried drug material was macerated with water in a stoppered flask for 24 hrs. with frequent shaking for first 6 hrs . The extract was filtered rapidly through filter paper taking precaution to prevent excessive loss of solvent. The residue was evaporated in a flat bottom shallow dish, dried at $105^0$C weighed and kept in a desiccator. Average extractive value in percentage w/w (on dry weight basis) was calculated with reference to air dried drug.( Table II).

### Phytochemical Screening

The fresh plants were collected. Leaves were separated and dried in shade and reduced to coarse powder. The powdered material was extracted with Chloroform, Methanol in Soxhlet apparatus for 48 hrs. The extract was filtered hot and solvent removed by distillation under reduced pressure (Khandelwal K.R). The percentage yield was calculated and the extract was further subjected to Phytochemical tests for Alkaloids, Glycosides, Flavonoids , Carbohydrates ,Tannins ( Table III).

## Results and Conclusion

The drug entrapment efficiency of all the formulations was in the range between 73.45% to 95.17%. The leaves were of size 2.5-5cm long & broad at first hirsute after wards scabrid, deeply 3-5 lobed, the lobes usually obovate, obtuse or acute constricted at the base, denticulate or crenulately toothed. Unpleasant taste and odour. Epidermis consists of cells with cuticle with covering trichomes. Mesophyll consists of single layered palisade parenchyma

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cells below the epidermis in mesophyll and midrib region as well, which are packed with out intercellular space . Midrib consists of single set of vascular bundles and Palisade cells. Moisture content and Ashvalue are given in Table I. Extractive values of alcohol and water and the percentage yield of chloroform extract and methanol extract are given in Table II. Phytochemical screening shows the presence of carbohydrates, glycosides, Tannins and absence of alkaloids and flavanoids.

**Fig: 1*Ctenolepis garcinii* plant.**

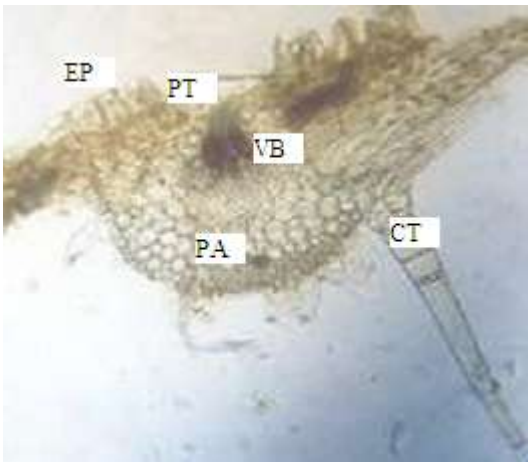
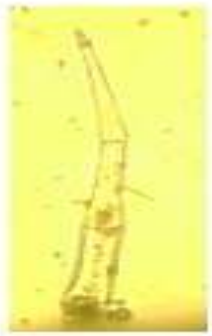



**Fig: 2 T.S. of Leaves**

EP- Epidermis, PT- Palisade Tissues, VB- Vascular Bundles, PA- Spongy parenchyma, CT- Covering Trichomes.



Covering Trichomes.

Stomata

Leaf lamina

**Fig: 3 Powder Microscopy of leaves**

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**Table: 1 Evaluation of Leaves of *Ctenolepis garcinii***

| S/No. | Parameters | Leaf |
|---|---|---|
| 1 | Ash value | 14.39 |
| 2 | Moisture content | 11.32 |

**Table: II Extractive values of Leaves of *Ctenolepis garcinii***

| S/No. | Solvent used | Average extractive value in % w/w on dry weight basis |
|---|---|---|
| 1 | Ethanol (Absolute) | 3.63 |
| 2 | Water | 24.89 |

**Table: III Phytochemical screening of Chloroform and Methanol extracts of Leaves of *Ctenolepis garcinii***

| S/.No. | Tests | Leaf |
|---|---|---|
| 1 | Carbohydrates | Present |
| 2 | Alkaloids | Present |
| 3 | Glycosides | Present |
| 4 | Tannins | Present |

**Table: III Analysis of powdered drug in different reagents**

| S/.No. | Drug | Colour |
|---|---|---|
| 1 | Powder. | Greyish green. |
| 2 | Powder + Water. | Yellow. |
| 3 | Powder + Con.Hcl. | Yellowish red. |
| 4 | Powder + Con.$H_2SO_4$. | Bluish black. |
| 5 | Powder + Con.$HNO_3$. | Orange red. |
| 6 | Powder + NaOH. | Brown |
| 7 | Powder + Acetone. | Yellowish green. |
| 8 | Powder + Methanol. | Green. |
| 9 | Powder + Acetic anhydride. | Yellow. |

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