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## Comparative studies on moisture content of different plant parts of *Leea macrophylla* Roxb. ex Hornem. (Family: Vitaceae) in Ranchi District, Jharkhand, India.

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**Abstract-** Natural products including plants have been utilized for the ailment of a number of human ailments. India is well known for its very rich heritage and acknowledged repository for medicinal plants since ancient decades. Throughout the history, man and plant had very close relationship. A good number of researches on medicinal plants have enriched the science of modern medicine over the last decades. *Leea macrophylla* locally known as 'Hastikarna Palasa' is an herbaceous shrub that have been used in herbal medicine as a cure for a number of disorders. Several studies have confirmed that the plant possesses potential anti-microbial, anti-oxidant, anti-inflammatory, analgesic, anti-cancer, anti-diabetic, neuropharmacological activities. It is a traditional medicinal plant reported remedies for diseases in rural India. Tribal communities used the plant parts as a remedy for a sum of ailments as well as nutritional products.

**Key words:** Modern medicine, *Leea macrophylla*, Hastikarna Palasa, Herbal medicine, Tribal communities.

### INTRODUCTION

Medicinal plants occupied a major spot in the pharmaceutical companies; herbal medicines remain the chief source of health care for the world population.<sup>1</sup> The use of medicinal plants is always useful to the mankind from decades. Medicinal plants received a great deal of attention for its safest uses and cost consideration. It is believed that the drug of natural origin plays a vital role in healthcare without any side effects.<sup>2</sup> Medicinal plants typically contain mixtures of different chemical compounds that may act individually, additively or in synergy to improve health.<sup>3</sup> The medicinal plant *Leea macrophylla* Roxb. ex Hornem. is locally identified as 'Hathikana', 'Hastikarna Palasa', 'Hathi Kanda' in India,

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(Fig.1). It is herbaceous shrub with very big sized leaf literally looks like an Elephant's ear. This plant is wild edible with enormous ethnomedicinal importance, economical uses, and various ethnopharmacological uses. The approximate amount of moisture present in a sample is articulated as a percentage of the sample's initial weight. The difference shown in between initial weight of different parts of plant and final weight of same parts of plant after drying in shade or in hot air oven is the moisture content. The moisture content percentage was estimated which transmogrify from one to the next part of the plant.

### MATERIAL & METHODS

In the study of moisture content, three different parts (tuberous roots, stems, leaves) of plant *Leea macrophylla* Roxb. ex Hornem. family Vitaceae were handpicked during

the month of June, 2022 from ICAR-RCER, Research Centre, Plandu, Ranchi and ICAR-IIAB, Research Institute, Ring Road, Garhkhatanga, Ranchi. Taxonomical identification of this plant was made by Univ. Prof. Dr. Kunul Kandir, Head of University Department of Botany, Ranchi University, Ranchi and with the help of flora book "The Botany of Bihar and Orissa" vol I-II.<sup>4</sup> The tuberous root, stems and leaves were separated from collected plant and washed thrice in running tap water to remove all dirt, soil, or any surface contaminants. After being washed all parts were kept in a cool area for drying before being weighted in weighing machine. Hereafter taking initial weight, all parts were kept in hot air oven at 55°C -60°C temperature till it dried properly. Then the dried parts of plant were again being weighted in weighing machine. The difference between initial weight of fresh parts of plant and final weight after drying was the moisture content.

The percentage of moisture content were calculated with the given formula: -

$$\text{Moisture content} = \frac{\text{initial weight of fresh parts of plant} - \text{final weight of dried parts of plant}}{\text{initial weight of fresh parts of plant}} \times 100$$

## RESULT & DISCUSSION

In this paper comparative study on moisture content of three different parts of ethnomedicinal plant *Leea macrophylla* Roxb. ex Hornem. has been done. Numerous revisions in this field have done in different areas of India. The comparative study on three different parts which includes tuberous roots, stems, leaves of the plant *Leea macrophylla*, family Vitaceae has been done and observed that moisture content of different parts of *Leea macrophylla* like tuberous roots having 67.906% (Table.1), Stems having 83.610% (Table.2), and Leaves having 70.814% (Table.3) of moisture content. It is observed that stems have the highest moisture content with 83.610% whereas, tuberous roots have lowest moisture content with 67.906% (Fig.2). The root is applied externally to allay pain, camp.<sup>4</sup> Few earlier works have been done in this field in different areas of Jharkhand.<sup>5</sup> Traditional practitioners used leaves, seeds and root in ayurvedic preparations since ancient times in the preparation of seasonal tonic known as 'Modaka' preparation.<sup>6</sup>

## CONCLUSION

The investigated plant is having highly medicinal properties and economical uses. Economically this plant's

stem is used in making small flute, leaves as platters, tuberous roots as yielding dye. Tribal people use leaves as vegetable in their food menu. Traditionally the plant parts are used to cure a number of ailments for example cough, common cold, rheumatism, goitre, lipoma, headache, body pain, fracture, gastric tumor, tetanus, arthritis, etc. On the basis of these traditional uses, a number of scientific studies were performed and they all revealed potential activities of the plant species like antioxidant, antimicrobials, analgesic, antidiabetics, neuropharmacological, anticancer etc. The data available in the present research work may help to check potency as well as efficacy of the drug. It is an urgent need to conserve different types of ethnomedicinal plants which are going to be extinct or which is not so commonly known.



**Fig.1- Photograph of habitat of *Leea macrophylla* Roxb. ex Hornem.**

Riya & Kumar- Comparative studies on moisture content of different plant parts of *Leea macrophylla* Roxb. ex Hornem. (Family: Vitaceae) in Ranchi District, Jharkhand, India.

**Table 1- Moisture content of tuberous roots.**

Material	Number of observations	Weight of fresh tuberous roots	Weight of dried tuberous roots	Difference	% of Moisture content
<i>Leea macrophylla</i> Roxb. ex Hornem. Tuberous roots.	1	10 gm	3.587	6.413	64.13%
	2	10 gm	3.388	6.612	66.12%
	3	10 gm	2.877	7.123	71.23%
	4	10 gm	2.993	7.007	70.07%
	5	10 gm	3.062	6.938	69.38%
	6	10 gm	3.119	6.881	68.81%
	7	10 gm	2.669	7.331	73.31%
	8	10 gm	2.999	7.001	70.01%
	9	10 gm	3.449	6.551	65.51%
	10	10 gm	3.951	6.049	60.49%
Total					679.06%

Average moisture content = 67.906%

**Table 2- Moisture content of stems**

Material	Number of observations	Weight of fresh stems	Weight of dried stems	Difference	% of Moisture content
<i>Leea macrophylla</i> Roxb. ex Hornem. Stems.	1	10 gm	1.404	8.596	85.96%
	2	10 gm	1.675	8.325	83.25%
	3	10 gm	1.762	8.238	82.38%
	4	10 gm	1.616	8.384	83.84%
	5	10 gm	1.554	8.446	84.46%
	6	10 gm	1.623	8.377	83.77%
	7	10 gm	1.696	8.304	83.04%
	8	10 gm	1.766	8.234	82.34%
	9	10 gm	1.722	8.278	82.78%
	10	10 gm	1.572	8.428	84.28%
Total					836.10%

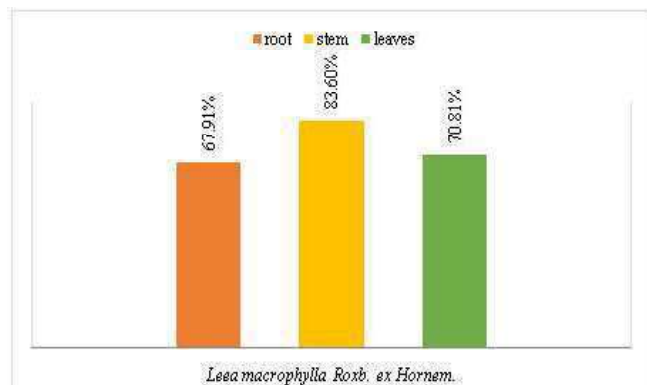
Average moisture content = 83.610%

**Table 3- Moisture content of leaves**

Material	Number of observations	Weight of fresh Leaves	Weight of dried Leaves	Difference	% of Moisture content
<i>Leea macrophylla</i> Roxb. ex Hornem. Leaves.	1	10 gm	3.089	6.911	69.11%
	2	10 gm	2.929	7.071	70.71%
	3	10 gm	3.005	6.995	69.95%
	4	10 gm	2.503	7.497	74.97%
	5	10 gm	3.088	6.912	69.12%
	6	10 gm	3.069	6.931	69.31%
	7	10 gm	2.969	7.031	70.31%
	8	10 gm	2.686	7.314	73.14%
	9	10 gm	3.015	6.985	69.85%
	10	10 gm	2.833	7.167	71.67%
Total					708.14%

Average moisture content = 70.814%

Fig.2- Comparative study on moisture content of different parts of *Leea macrophylla* Roxb. ex Hornem.



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