

Formulation and Analysis of *Hydrocotyle Vulgaris* L and *Mentha Spicata*.

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ABSTRACT

Hydrocotyle vulgaris (neervallari) commonly known as marsh pennywort is a creeping mat forming plant of wet areas such as fens and bogs. The perennials reach heights of 5 to 20 centimetres. A small umbelliferous plant growing in southern Africa, India, indigenous to the southern united states. Genus *mentha* (mint) belonging to the family of *lamiaceae*, whose plants are among the most aromatic and spread in diverse environments worldwide, having simple, characteristic leaves with pleasant scent. Plants of this genus are perennial and are used for essential oil production, mainly in USA, India, China, and Iran. These two herbs were identified and dried in three variations as sun drying, shadow drying, and hot air oven drying and then powdered. Nutrient analysis and microbial count were assessed. And then in convenient foods these powders were incorporated and prepared idly powder, soup mix, bread, rusk, noodles and sevai. Sensory evaluation done by 30 semi trained panel members. In that all recipes variation 2(10g) is highly accepted.

Key words: *Hydrocotyle vulgaris* (neervallari), Genus *mentha* (mint), convenient foods, prepared idly powder, soup mix, bread, rusk, noodles and sevai.

I. INTRODUCTION

Hydrocotyle vulgaris commonly known as marsh pennywort is a creeping mat forming plant of wet areas such as fens and bogs. The perennials reach heights of 5 to 20 centimetres. A small umbelliferous plant growing in southern Africa, India, indigenous to the southern united states. The serrated, rounded, shield shaped leaves can have a diameter of up to 4 centimetres but are often smaller. They contain secondary metabolites yield flavonoids, reducing sugar, saponins, steroids, tannins, and terpenoids. The decoction of whole plants for cough and kidney stones. Used for

eczema, headaches, dizziness, bloody stools. Leaves used to dress burns or applied to skin diseases. Several species under genus *Hydrocotyle* possess mild diuretic, anti-rheumatic, dermatological, peripheral vasodilator and vulnerary properties(1).

Genus *mentha* belonging to the family of *lamiaceae*, whose plants are among the most aromatic and spread in diverse environments worldwide, having simple, characteristic leaves with pleasant scent. Plants of this genus are perennial and are used for essential oil production, mainly in USA, India, China, and Iran. Fresh and dried plant materials of *mentha* species are widely used in industry as part of confectionaries, flavour enhancing agents, pharmaceuticals, cosmetics. *Mentha* species are widely used in savoury dishes, food, beverages. Phytochemicals derived from mint also showed anticancer activity against different types of human cancers such as cervix, lung, Breast. *Mentha* species are rich in polyphenols and contain flavonoids including luteolin and derivatives apigenin, acacetin, thymonin and also flavanols such as catechin, Epicatechin, and coumarins. In ayurvedic medicine some *mentha* species are used to mitigate skin problems and headaches. Numerous medicinal plants including *mentha* genus contain high levels of antioxidant including phenolic compounds, ascorbic acids, and carotenoids that can delay or inhibit the oxidation of different molecules. Besides antibacterial activity *Mentha* species have also been investigated as a potential source of antifungal agents to control pathogenic molds. *Mentha* leaves are often used by campers to repel mosquitoes (2).

OBJECTIVE

- To identify plant.
- To analyse the plant
- To formulate and standardize the products
- Sensory evaluation of developed products.

METHODS

Based on the literature and reports from Ayurveda on the benefits, the herb *Hydrocotyle Vulgaris* L and *Mentha Spicata* was selected. The herb would be dehydrated by Sun drying, shadow drying and hot air oven drying method and then powdered. The powdered herb was incorporated in the extruded foods.

1. Identification and selection of plant

The herb *Hydrocotyle Vulgaris* L known leaves are kidney shaped with crinkled edge, frequently broader than long, up to 7cm fleshy stalks, fine roots, leaves floating or emergent. (3)



Easily grown in humus, consistently moist soils in full sun to part shade. Tolerates full shade. May be grown as a marginal aquatic plant in mud at the side of a pond or water garden or in up to 2” of standing water. Grow in containers in water gardens. (4) and *Mentha Spicata* plant are among the most aromatic and spread in diverse environments worldwide, having simple, characteristic leaves with pleasant smell. These plants were selected for the study. These plants were locally available herb in Tamil Nadu. The researcher gave the plant in Botanical Survey of India and checked for the family of the plant selected.

2. Method of drying

The herb was dehydrated by Sun drying, shadow drying and hot air oven drying method and then powdered. The powdered herbs incorporated in the extruded food.

a) Sun drying

Sun drying is the removal of moisture content in the plant. By dehydration method (sun drying). Drying is the most common method of storing medicinal and aromatic plants and protecting their biochemical compounds.(5)

b) Shadow drying

Shadow drying was carried out under natural air flow and surroundings temperature. Generally herbs, green and red chillies, okra, and beans etc. are dried under shaded area with good air circulation.(5)

c) Hot air oven drying

A hot air oven is a laboratory appliance that is used to dry, sterilize or heat materials. It works by circulating hot air inside the oven chamber to evenly distribute heat to the materials being processed.(5)

These *Hydrocotyle Vulgaris* L and *Mentha Spicata* 100g were taken and dried for 3 days under sun, shadow dried for 5 days and hot air oven dried for 2-3 hours; after drying weight of the dehydrated leaves was reduced to 50% as there is loss of moisture content and then made into powder. *Hydrocotyle Vulgaris* L (50g) and *Mentha Spicata* (50g) were mix together to incorporate in recipes.

3. Standardization of recipe

Indian food was selected to incorporate *Hydrocotyle Vulgaris* L and *Mentha Spicata*.

Sevai

Extruded food sevai is taken to prevent the nutrient loss. Four variations of the product were prepared with different level of incorporation of the powder.

- ▶ **Standard-** rice flour 100g, salt 2g, water-100ml
- ▶ **Variation 1 (V1)-** rice flour-95g, salt-2g, *Hydrocotyle Vulgaris* L and *Mentha Spicata* - 5g, water-100ml
- ▶ **Variation 2 (V2)-** rice flour-90g, salt-2g, *Hydrocotyle Vulgaris* L and *Mentha Spicata*-10g, water-100ml

- ▶ **Variation 3 (V3)**- rice flour-85g, salt-2g, Hydrocotyle Vulgaris L and Mentha Spicata-15g, water-100ml

Noodles

- ▶ **Standard**- Wheat flour 100g, salt 2g, water-50ml
- ▶ **Variation 1 (V1)** Wheat flour 95g, salt 2g, water-50ml, Hydrocotyle Vulgaris L and Mentha Spicata -5g.
- ▶ **Variation 2 (V2)**- Wheat flour 90g, salt 2g, water-50ml, Hydrocotyle Vulgaris L and Mentha Spicata-10g.
- ▶ **Variation 3 (V3)**- Wheat flour 85g, salt 2g, water-50ml, Hydrocotyle Vulgaris L and Mentha Spicata-15g.

Soup Mix

- ▶ **Standard**- corn flour-20g, milk powder-6g, dried tomato powder-10g, dried onion powder-10g, (carrot, sweet corn, cabbage, peas, broccoli-40g), pepper powder-10g, salt-4g (100g)
- ▶ **Variation 1 (V1)** soup mix 95g, Hydrocotyle Vulgaris L and Mentha Spicata -5g.
- ▶ **Variation 2 (V2)**- soup mix 90g, Hydrocotyle Vulgaris L and Mentha Spicata-10g.
- ▶ **Variation 3 (V3)**- soup mix 85g, Hydrocotyle Vulgaris L and Mentha Spicata-15g.

Idly Powder

- ▶ **Standard**- Bengal gram dhal-40g, urad dhal-40g, Dried red chillies-10g, cumin seeds-5g, salt- 5g.
- ▶ **Variation 1 (V1)** idly powder 95g, Hydrocotyle Vulgaris L and Mentha Spicata -5g.
- ▶ **Variation 2 (V2)**- idly powder 90g, Hydrocotyle Vulgaris L and Mentha Spicata-10g.

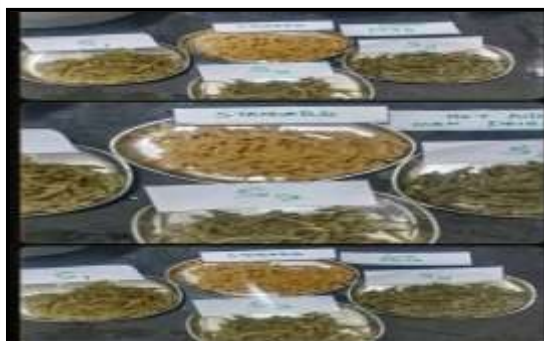
- ▶ **Variation 3 (V3)**- idly powder 85g, Hydrocotyle Vulgaris L and Mentha Spicata-15g.

Bread

- ▶ **Standard**- Wheat flour 100g, milk-45 ml, sugar- 8 g, yeast-2 g, salt 2.5g, butter 12.5 g, water-30 ml.
- ▶ **Variation 1 (V1)**- Wheat flour 95g, milk-45 ml, sugar- 8 g, yeast-2 g, salt 2.5g, butter 12.5 g, water-30 ml, Hydrocotyle Vulgaris L and Mentha Spicata -5g.
- ▶ **Variation 2 (V2)**- Wheat flour 90g, milk-45 ml, sugar- 8 g, yeast-2 g, salt 2.5g, butter 12.5 g, water-30 ml, Hydrocotyle Vulgaris L and Mentha Spicata -10g.
- ▶ **Variation 3 (V3)**- Wheat flour 85g, milk-45 ml, sugar- 8 g, yeast-2 g, salt 2.5g, butter 12.5 g, water-30 ml, Hydrocotyle Vulgaris L and Mentha Spicata -15g.

Rusk

- ▶ **Standard**- Wheat flour 100g, egg-, sugar- 8 g, yeast-2 g, salt 2.5g, butter 12.5 g, water-30 ml.
- ▶ **Variation 1 (V1)**- Wheat flour 95g, milk-45 ml, sugar- 10 g, yeast-2.5 g, salt 2.5g, butter 12.5 g, water-30 ml, Hydrocotyle Vulgaris L and Mentha Spicata -5g
- ▶ **Variation 2 (V2)**- Wheat flour 90g, milk-45 ml, sugar- 8 g, yeast-2 g, salt 2.5g, butter 12.5 g, water-30 ml, Hydrocotyle Vulgaris L and Mentha Spicata -10g
- ▶ **Variation 3 (V3)**- Wheat flour 85g, milk-45 ml, sugar- 8 g, yeast-2 g, salt 2.5g, butter 12.5 g, water-30 ml, Hydrocotyle Vulgaris L and Mentha Spicata -15g





4. Nutrient analysis

Nutrient analysis is often thought only to be concerned with the determination of food composition and its nutritive value quality.

Analytical characterization is also important for compliance with legal standards, quality assurance and determination of nutritional value.

SNO	PARAMETERS	SUN DRIED/100 g	SHADOW DRIED/100 g	HOT AIR OVEN DRIED /100g
1.	Moisture	10.83 g	11.18g	10.69g
2.	Crude fibre	1.1g	0.98g	1.2g
3.	Vitamin C	337mg	306mg	237mg
4.	Calcium	1595mg	1101.6mg	1440.8mg
5.	Phosphorus	6.57mg	7.58mg	5.34mg
6.	Nitrate	54.19mg	41.01mg	55.8mg
7.	Lead	3.71mg	0.43mg	2.70mg
8.	Nickel	2.21mg	1.52mg	1.98mg
9.	Copper	2.57mg	1.24mg	2.95mg
10.	Zinc	4.49mg	4.96mg	5.37mg
11.	Total plate count	39cfu/g	6.4x10 ¹ cfu/g	14cfu/g

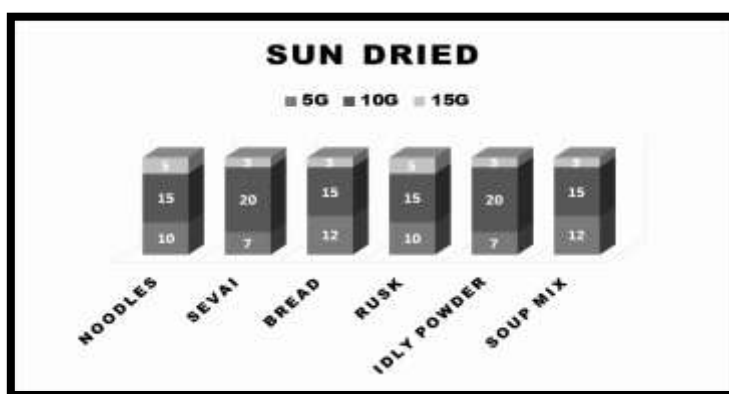
II. RESULT AND DISCUSSION

Convenient products was selected; for incorporation of *Hyocotyle vulgaris* L (Neer vallarai) and *Mentha Spicata* (Mint). L (Neer vallarai) and *Mentha Spicata* (Mint). The powder was incorporated at the levels of 5 percent, 10

percent and 15 percent. Acceptability of the food is also an important criteria in any situation. Using 9 point hedonic scale the variations were subjected to sensory evaluation and the best product was selected.

Among the thirty semi trained panel members; ten members accepted 5g (V1), fifteen members accepted 10g (V2) and five members accepted 15g (V3) incorporated sun dried *Hyrocotyle vulgaris* L (Neer vallarai) and *Mentha Spicata* (Mint). in noodles. seven members accepted 5g (V1), twenty members accepted 10g (V2) and three members accepted 15g (V3) incorporated sun dried *Hyrocotyle vulgaris* L (Neer vallarai) and *Mentha Spicata* (Mint). (Neer vallarai) in sevai. twelve members accepted 5g (V1), fifteen members accepted 10g (V2) and three members accepted 15g (V3) incorporated sun dried *Hyrocotyle vulgaris* L (Neer vallarai) and *Mentha Spicata* (Mint). (Neer vallarai) in bread. ten

members accepted 5g (V1), fifteen members accepted 10g (V2) and five members accepted 15g (V3) incorporated sun dried *Hyrocotyle vulgaris* L (Neer vallarai) and *Mentha Spicata* (Mint). (Neer vallarai) in rusk. seven members accepted 5g (V1), twenty members accepted 10g (V2) and three members accepted 15g (V3) incorporated sun dried *Hyrocotyle vulgaris* L (Neer vallarai) and *Mentha Spicata* (Mint). (Neer vallarai) in idly powder. twelve members accepted 5g (V1), fifteen members accepted 10g (V2) and three members accepted 15g (V3) incorporated sun dried *Hyrocotyle vulgaris* L (Neer vallarai) and *Mentha Spicata* (Mint). (Neer vallarai) in soup mix.



Among the thirty semi trained panel members; ten members accepted 5g (V1), fifteen members accepted 10g (V2) and five members accepted 15g (V3) incorporated Shadow dried *Hyrocotyle vulgaris* L (Neer vallarai) and *Mentha Spicata* (Mint). (Neer vallarai) in noodles. seven members accepted 5g (V1), twenty members accepted 10g (V2) and three members accepted 15g (V3) incorporated Shadow dried *Hyrocotyle vulgaris* L (Neer vallarai) and *Mentha Spicata* (Mint). (Neer vallarai) in sevai. twelve members accepted 5g (V1), fifteen members accepted 10g (V2) and three members accepted 15g (V3) incorporated Shadow dried *Hyrocotyle vulgaris* L (Neer vallarai) and *Mentha Spicata* (Mint). (Neer vallarai) in bread. ten

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Among the thirty semi trained panel members; ten members accepted 5g (V1), fifteen members accepted 10g (V2) and five members accepted 15g (V3) incorporated Hot air oven dried *Hyrocotyle vulgaris* L (Neer vallarai) and *Mentha Spicata* (Mint). (Neer vallarai) in noodles. seven members accepted 5g (V1), twenty members accepted 10g (V2) and three members accepted 15g (V3) incorporated Hot air oven dried *Hyrocotyle vulgaris* L (Neer vallarai) and *Mentha Spicata* (Mint). (Neer vallarai) in sevai. twelve members accepted 5g (V1), fifteen members accepted 10g (V2) and three members accepted 15g (V3) incorporated Hot air oven dried *Hyrocotyle vulgaris* L (Neer vallarai) and *Mentha Spicata* (Mint). (Neer vallarai) in bread. ten members

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The mean score shows that variation 2 (10gms) in all the sensory criteria were well accepted by the panel members.

III. CONCLUSION

The convenient products were prepared by incorporation of *Hyrocotyle vulgaris* L (Neer vallarai) and *Mentha Spicata* (Mint). (Neer vallarai). Among all the variation, variation 2 (V2) was highly acceptable by all compared to all other



variations. *Hyrocotyle vulgaris* L (Neer vallarai) and *Mentha Spicata* (Mint). (Neer vallarai) is locally available herb and highly acceptable by all panel members. Thus, the present study concluded that *Hyrocotyle vulgaris* L (Neer vallarai) and *Mentha Spicata* (Mint) powder can be incorporated in any food.

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