

Formulation and Development of Herbal hair oil using Betel Leaf

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ABSTRACT :

Piper betel also known as Piper betel Blanco, is a valuable cash crop in the medical and economic domains. It is a member of the Piperaceae family, sometimes referred to as the "green gold," and is grown mostly in South East Asian nations for its attractive glossy heart-shaped leaves, which can be chewed or consumed like betelquid. The plant is used extensively in Chinese and Indian folk medicine, as a carminative, stimulant, astringent, against parasitic worms, conjunctivitis, rheumatism, wounds, etc., as well as for religious purposes. The most significant bioactive compound among the diverse phytoconstituents found in essential oil and extracts is hydroxycavicol, the most significant bioactive compound; the other properties are antiproliferation, anticancer, neuropharmacological. P. betle's botanical description, geographical distribution, economic value and cultivation, ethnobotanical uses, preclinical pharmacological properties, and insights into its toxicology, clinical efficacy, and safety are all thoroughly summarized in this review. The results indicate that P. betle is a safe and effective natural remedy that can be taken orally for a variety of medical conditions in humans, but more research is required to clarify its underlying molecular mechanisms of action, clinical aspects, structure-activity relationships, bioavailability, and synergistic interactions with other pharmaceuticals.

KEYWORDS :Betel leaf, Coconut oil,Hibiscus leaf, Curry leaf.

I INTRODUCTION

Formulation applied to the hair for the treatment of hair disorders such as baldness, greying of the hair, hair fall, dry hair, and also helps in providing nourishment to hair. Hair care products are defined as the formulations which are used for the purpose of cleansing, modifying the texture of the hair, providing nourishment to the hair, and maintaining the healthy appearance of hair. Herbal hair oil is a crucial component of herbal cosmetics. Herbal hair oil is more preferred and used in many aliments of the hair. (1)

Try this homemade pack for healthy hair. Betel leaves are not just for treating hair loss or fall. They can be used for treating other hair problems as well.

You will need - Coconut oil,Hibiscus leaves, Curry leaves, Betel leaves (2)

In addition to having several nutrients that are vital for healthy hair and antimicrobial and antibacterial qualities that help make your hair long and thick while conditioning it, betel leaves also help treat itching, dandruff, and split ends because they inhibit the growth of fungi and protect against allergic reactions. But perhaps the most important nutrient that betel leaves contain is vitamin C.(3)

Here are some betel leaf uses for healthier, shinier hair: Vitamin C in betel leaves aids in lowering hair fall, encouraging hair growth, and preventing premature greying of hair.

1)Combine sesame, ginger, and coconut oil; massage into scalp; rinse with a shampoo free of chemicals an hour later.

2)Five betel leaves, two tablespoons coconut oil, one teaspoon castor oil, and one teaspoon water are combined to make a paste that can be applied to the scalp like a hair mask and then rinsed off with a mild shampoo and, for best results, a good-quality conditioner.(4)



BETEL LEAVES

One of the best hair augmentation remedies is betel leaf oil, which lowers hair loss and prevents dandruff, hair thinning, dry scalp, and premature grey hair. It strengthens hair strands when massaged into the scalp. A few drops of this essential oil can be added to shampoo for better results.(5)

Betel leaves have anti-cancer, antioxidant, anti-allergic, anti-fungal, anti-diabetic, and antimicrobial properties. They may also help with headache relief, wound healing, cancer prevention, and the reduction of gastric ulcers, diabetes, and allergies.(6)

Applying coconut oil to your hair both before and after washing it is beneficial because it helps prevent protein loss in your hair, which improves the health and condition of your hair. A highly adaptable health and beauty product is coconut oil. People use it for a variety of purposes, including moisturizing their skin and removing makeup as well as cooking and cleaning.(7)

You may use coconut oil as a refresher. If you have curly hair, lather generously from the root to the tip of your curls. The shine and hydration factor are out of this world. Work a small amount of it into the ends of your hair after showering as a detangler or daily moisturizer.(8)

Coconut oil can help keep your hair in good condition and prevent this, as excessive grooming can harm the hair shaft and, in severe cases, result in hair loss.

Additionally, it is asserted that eating coconut oil can be advantageous for the health of one's hair because of the nutrients it contains, but there is little proof to support this claim (9)



COCONUT OIL

Hibiscus is a natural powerhouse of amino acids, which provide your hair with nutrients that promote hair growth. Amino acids are great at producing keratin, a building block of hair that binds the hair and prevents breakage. Keratin also encourages the thickness of the hair strands, making it much more manageable. If you are tired of seeing your tresses float down the drain every time you wash your hair, now may be the best time to consider hibiscus.(10)

Your hair can become stronger by mixing yogurt and a pack of hibiscus.

(3) You can get darker hair colour and natural shine by using hibiscus and henna hair masks.(11)

Curry leaves for hair can be used to get rid of dandruff because they have antiseptic properties that help fight and treat bacterial, fungal, and protozoal infections.(12)



HIBISCUS LEAVES

The topical application of curry leaves activates the hair follicles and promotes hair growth. Curry leaves also contain proteins, antioxidants, vitamins C and B, and all of these nutrients support healthy circulation to the blood vessels in the scalp, aid in cellular regeneration, and encourage hair growth and skin renewal.(13)

Curry leaves are said by Ayurveda to have a variety of advantageous qualities



CURRY LEAVES

Blood pressure lowering, antibacterial, antiviral, antifungal, antiprotozoal, laxative (helps constipation), anti-diarrheal, wound-healing, anti-cancer, anti-diabetic, anti-inflammatory (reduces swelling), antioxidant, cholesterol-lowering, anti-ulcer, and anti-tumor activity are just a few of the potential effects this substance may have.(14)

II MATERIAL AND METHODOLOGY

Materials -

- 1)Betel leaf
- 2) Coconut oil
- 3) Hibiscus leaf
- 4) Curry leaf
- 5)Rose petals

Cultivation Of Betel Leaves :

The betel leaf is grown primarily in South and Southeast Asia, ranging from India to Papua New Guinea. It requires a tree or a long pole for support. Waterlogged, saline, and alkali soils are unsuitable for betel cultivation. In Bangladesh, betel is grown in gardens called baroujs, which are fenced with bamboo sticks and coconut leaves. The soil is plowed into furrows that measure 10 to 15 meters in length, 75 centimeters in width, and 75

centimeters in depth. The soil is then plowed into furrows that are thoroughly incorporated with wood ash, oil cakes, and leaves. The cuttings are planted at the start of the monsoon season.

The cultivation of this crop requires proper shade and irrigation; the soil should be kept moist but not overly so; the furrows should be sprinkled with cow dung slurry and dried leaves and wood ash applied every two weeks; the application of different types of leaves every month is thought to be beneficial for the growth of the betel; in three to six months, the vines reach 150 to 180 cm in height and will branch; the farmer harvests the betel by plucking the leaf and its petiole with his right thumb; the harvesting process takes 15 days to one month. The betel plant has been imported into research labs for numerous Bangladeshi chemical and food nutrient companies.

Betel is grown and cultivated as an important crop in rural Bangladesh; the harvested leaves are consumed locally and exported to other parts of Asia, the Middle East, Europe, and the Americas.(15)



BETEL LEAVES

Betel leaf

Vernacular Names :

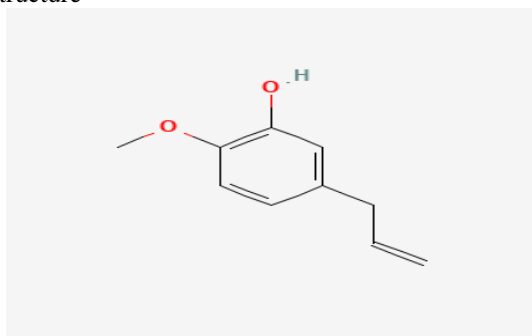
- 1)Hindi - Pan
- 2)Malayalam - Vetta, Vettila
- 3)Bengali - Pan
- 4)Sanskrit - Tamboolavalli, Tamboola, Tamboola vallika
- 5)English - Betel leaf plant

Taxonomical classification :

- 1)Order - Piperales
- 2)Family - Piperaceae
- 3)Genus - Piper
- 4)Species - Betel

5) Kingdom - Plantae
6) Division - Magnoliophyta

Structure



CHAVIBETOL

Medicinal uses of betel leaf

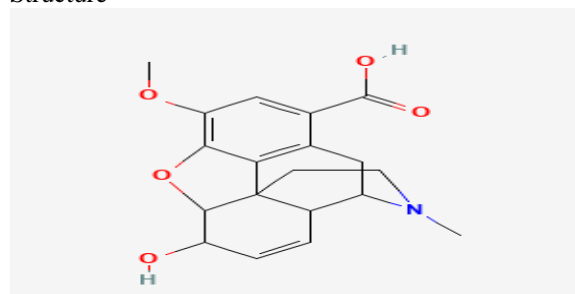
- 1) Adjuvant (anupana): Appears as anupana in kapha-related ailments such as bloating, running nose, and coughing, among others.
 - 2) Paan: It is used as a paan to treat sore throats, coughs, tastelessness, bad breath, and toothaches.
 - 3) Chewing betel leaf helps with anorexia, bloating, indigestion, and mouth cleaning after a meal.
 - 4) Juice from leaves is used to treat sore throats, asthma, and laryngitis (vowel cord swelling).
 - 5) Children's cough and asthma are relieved when betel leaves are wrapped around the chest and warmed with castor oil.
 - 6) When suffering from diphtheria, one can gargle with the juice of four betel leaves or inhale the steam created by mixing two drops of betel leaf oil with warm water.
 - 7) Betel leaves are heated and wrapped around arthritic joints to reduce pain, swelling, and inflammation; it is also wrapped around the breast to prevent breast milk production.
 - 8) Eye drops: The juice of betel leaves mixed with honey is used as eye drops for netraabhishtyanda (conjunctivitis).
- Purgative: Betel leaf infusion, taken cold on an empty stomach, is used as a mild purgative because of its sramsana effect.
- 9) Children who are constipated can use a betel leaf stalk dipped in castor oil as a suppository. (16)

Coconut oil

Taxonomical classification
Kingdom - Plantae
Division - Magnoliophyta
Class - Liliopsida
Order - Arecales
Family - Arecaceae

Genus - Cocos

Structure



FATTY ACID

Hibiscus leaf

Taxonomical classification

Order: Sapindales

Family: Rutaceae

Genus: Murraya

Species: koenigi

Kingdom: Plantae

Subkingdom: Tracheobionta

Division: Magnoliophyta

Class: Magnoliopsida

Subclass: Rosidae

Order: Sapindales

Vernacular name

English - Curry leaves

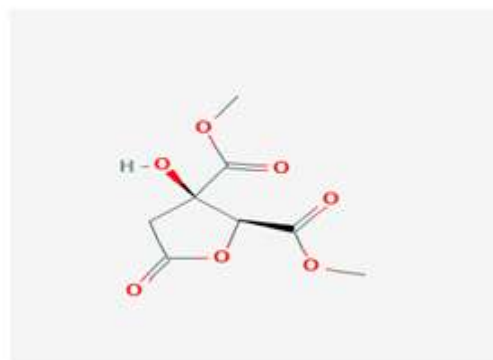
Kannada - Karibevu

Tamil - Kariveppilai

Malayalam - Kariveppu

Marathi - Kadhilimb

Structure



HIBISCUS ACID

Curry leaf

Taxonomical classification

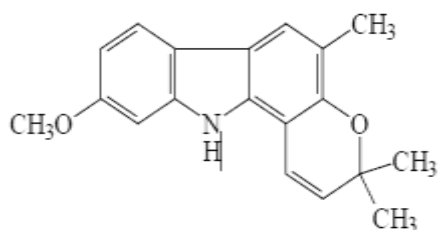
Order: Sapindales

Family: Rutaceae

Genus: Murraya

Species: koenigi
 Kingdom: Plantae
 Subkingdom: Tracheobionta
 Division: Magnoliophyta
 Class: Magnoliopsida
 Subclass: Rosidae
 Order: Sapindales

Vernacular name
 English - Curry leaves
 Kannada - Karibevu
 Tamil - Kariveppilai
 Malayalam - Kariveppu
 Marathi - Kadhilimb
 Sanskrit - Girinimba
 Structure



CURRY LEAVES

Rose petals perfume

The evergreen rose flower's loose petals are the foundation for rose oil, rose water, and rose petal powder—all of which have been used for centuries in beauty treatments. The rose is a

universal symbol of love and is rich in essential nutrients and vitamins that have the power to transform hair. The following are some of the main advantages of rose petals for hair.



ROSE PETALS

Methodology

Process :

1. Take a 10 to 15 leaves of betel leaf , curry leaf and hibiscus leaf.
2. Washing the leaves
3. Then cut in small pieces
4. Take 80 ml coconut oil in beaker then add small pieces of leaves in coconut oil.
5. Heat the oil on heating mental.
6. Then heat the oil up to the colure of the leaves change into the brownish colour.
7. Turn off the heat and allow it to cool.
8. Filter the oil .
9. Then store the filtrate in the container.

III FORMULATION TABLE

Sr.no	INGREDIENTS	F1	F2	F3	F4
1	Betal leaves	10	10	10	10
2	Coccount oil	50ml	60ml	70ml	80ml
3	Hibiscus leaves	9	9	9	9
4	Curry leaves	8	8	8	8
5	Rose petal perfume	1ml	2ml	3ml	4ml

IV EVALUATION TEST

There are different types of evaluation test for hair oil

- 1) Acid value test
- 2) Saponification test
- 3) PH
- 4) Viscosity
- 5) Specific gravity

1)Acid value test

Preparation of 0.1 molar solution: Weighed 0.56 g KOH pellets and dissolved in 100 mL of distilled water and stirred continuously. The prepared 0.1 molar KOH solution was filled in the burette. Preparation of sample: Measured 10 mL oil and dissolved in 25 mL of ethanol and 25 mL of ether mixture and shaken. Added 1 mL of phenolphthalein solution and titrated with 0.1 molar KOH solution.

2)Saponification value test

Accurately weighed 1 mL of oil into a 250 mL of conical flask and 10 mL of ethanol ether mixture (2: 1) was added. To this flask 25 mL of 0.5 N alcoholic KOH was kept for 30 min and the flask was cooled. The cooled solution was titrated against 0.5 N HCl using phenolphthalein indicator. Similarly the blank titration was performed without taking oil (sample). Amount of KOH in mg used was calculated.

3)PH

The pH of herbal hair oil was determined using pH meter.

4)Viscosity

The viscosity was determined using Ostwald's viscometer.

5)Specific gravity

Take the specific gravity bottle, rinsed it with distilled water, dry it in oven for 15 minutes, cool, closed it with cap and weigh it (a). Now fill the same specific gravity bottle with the sample and closed it with cap and again weigh it (b). Determine the weight of sample per milliliter by subtracting the weight (b-a).

6)Spredability test

The spreadability of various nanoemulgel formulations were determined by measuring the spreading diameter of 0.5 g of the sample between two horizontal glass plates after one minute. 5g weight was then applied to the upper plate. each formulation was determined three times for the accuracy and consistency of the results.

7)Apperance

Different sample of nanoemulsion and nanoemulgel were prepared. Their stability and physical appearance were observed based on the colour, transparency and the ability for the sample to stay unseparated.

8)Skin irritation

The prepared formulations are assessed for primary skin irritation test on our hand, little amount at F1, F2, F3 were applied on test site and observed for edema.

V RESULT AND DISCUSSION

Sr.no	Evaluation Test	F1	F2	F3	F4
1	Colour	Dark green	Dark green	Dark green	Dark green
2	Odour	Characteristics	Characteristics	Characteristics	Characteristics
3	PH	7.2	7.2	7.3	7.4
4	Viscosity	0.0504	0.0522	0.0547	0.0523
5	Grittiness	smooth	smooth	smooth	smooth
6	Specific gravity	9.454	9.621	9.769	9.631
7	Skin Irritation	No irritation	No irritation	No irritation	No irritation
8	Acid value	9.424	11.399	13.80	1.557

9	Saponification value	19.635	26.367	23.842	21.543
10	Consistency	Liquid	Liquid	Liquid	Liquid

VI CONCLUSION

Conclusion, the market for betel leaf oil has been growing recently due to its numerous uses in the personal care, cosmetics, and pharmaceutical industries. Because of its therapeutic qualities and rising consumer awareness, betel leaf oil is anticipated to see substantial demand in the global market; however, issues with availability, quality control, and regulations must be resolved for long-term market growth. All the values in the evaluation of the finished product showed that they are within the acceptable limits, so it is concluded that the oil is beneficial in maintaining good hair growth, turning grey hairs to black, protecting against dandruff, and producing lustrous looking hair. Overall the herbal formulation offers a good blend of vitamins, antioxidants, terpenoids, and essential oils.

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