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Research Article

Formulation and Evaluation of Anti-fungal Cream Using Senna-Tora and Origanum Vulgare

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ABSTRACT

Formulation of this hair oil is primarily intended to address hair problems such as hair loss and dandruff. To manufacture hair oil, we decide to utilise coconut oil and Ficus Bengalese roots. Ficus Bengalese roots are a great way to encourage hair growth and lessen hair loss. Hair is enhanced by the protein, flavonoids, phenolic content, and glycosides present in these roots. An assessment test can be carried out after hair oil formulation to accurately determine the oil's colour, viscosity, and pH.

INTRODUCTION

The giant evergreen banyan (*Ficus benghalensis*), a member of the Moraceae family, is found throughout India, ranging from the sub-Himalayan region to the deciduous forests of the Deccan and South India. It is one of the four holy trees, Nalpamara (Ksirivrkas), that are supposed to be planted around houses and temples. It is thought to be harmful to forest trees, walls, and structures because it grows from seeds that birds drop on old walls or other trees. *Ficus benghalensis*, also referred to as the banyan tree, has medicinal value

because its various plant parts—leaves, stem, bark, root, and aerial root—contain distinct compounds.

Botanical Information:

Kingdom: Plantae **Family:** Moraceae **Genus:** *Ficus*

Species: *F. benghalensis*

Common Names: Banyan tree, Indian Banyan, Bengal Fig, East Indian Fig, Sacred Fig

Native Distribution:

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Originates from the Indian subcontinent and Southeast Asia Found in tropical and subtropical regions. Naturalized in many parts of the world.

Characteristics:

Large, evergreen tree with aerial roots Spreads up to 100 meters in diameter Trunk diameter up to 10 meters Leaves: ovate, elliptical, and glossy Fruits: small, red, and edible.

Cultural significance:

Sacred tree in Hinduism, Buddhism, and Jainism National tree of India. Symbol of longevity, strength, and wisdom Featured in various mythologies and folklore.

Traditional Uses:

Medicinal: treats various ailments, including diabetes, fever, and skin issues Timber: used for furniture, construction, and crafts

Food: fruits and leaves edible

Religious: used in rituals and ceremonies

Economic Importance:

Timber and wood products Medicinal and herbal products Ecotourism and conservation Soil erosion prevention

Interesting Facts:

Longest-living tree species, with some individuals over 1,000 years old Supports diverse wildlife, including birds, bats, and insects. Aerial roots create a unique, natural canopy. Ficus benghalensis is an extraordinary tree species, revered for its ecological, cultural, and economic significance.

Review Of Literature: -

Sagar V. Gujar¹, Snehal B. Gajbe², Shubham K. Mahandule³, Shivam B. Bhawar⁴, Suraj A. Borade⁵, Komal V. Kanade⁶, Shrutika R. Fatangade⁷, Akanksha S. Dhokare, et al 2024 formulation and evaluation of herbal hair oil from Aerial roots of banyan tree by using olive oil as an based. The formulation and assessment of a herbal oil made from the aerial roots of the Banyan tree, formally known as Ficus benghalensis, are the subjects of this study report. The study looks into the herbal oil's physicochemical characteristics, extraction method, and possible medical uses. A number of factors, including yield, pH, viscosity, and antioxidant activity, are evaluated in order to ascertain the formed oil's quality and effectiveness. Furthermore, antibacterial and anti-inflammatory qualities are assessed in order to investigate possible uses in conventional medicine and skincare. The results offer important new information about using the therapeutic qualities of banana tree aerial roots to create natural herbal treatments. Ms. Rodage Sonal Mahadev, Ms. Domale Snehal Dattatray, Ms. Jamble Snehal Dnyandeo, Ms. Hole Komal.et al 2023 formulation and evaluation of herbal hair serum from arial root of banyan tree Abstract Dandruff, hair loss, and fading are the main problems associated with hair loss, which is a worry for both men and women. This hair serum formulation's main objective was to treat hair problems such dandruff, hair loss, and other associated problems. For the production of hair serum, we use Ficus bengalensis roots and rosemary essential oil. Ficus bengalensis roots are a great way to encourage hair growth and lessen hair loss. Hair benefits from the phytosterols, protein, flavonoids, phenolic content, and glycosides present in these roots. Evaluation tests can be conducted when the hair serum is created, and the viscosity was successfully ascertained. Tejaswini S. Shinge, Apeksha S. Jadhav, Sonali R. Mali, Poonam S. Shinde, Pooja S Mali et al 2023 formulation and



evaluation of herbal hair oil from aerial root of banyan tree The development and evaluation of a herbal oil derived from the aerial roots of the banyan tree, or *Ficus benghalensis* as it is scientifically known, are the subjects of this study. This study looks at the herbal oil's physicochemical properties, extraction process, and potential medical applications. A variety of parameters, including as yield, pH, viscosity, and antioxidant activity, are assessed in order to determine the quality and efficacy of the produced oil. Antibacterial and anti-inflammatory properties are also evaluated to explore potential applications in skincare and traditional medicine. The results enable the development of natural herbal remedies by harnessing the medicinal properties of banana tree aerial roots.

Rationale Of the Study: -

Need Of Work: -

The loss of hair from a portion of the head or body is referred to as hair loss, alopecia, or baldness. Common forms include alopecia areata, telogen effluvium, and hair loss with either a male or female pattern. Women typically experience hair loss for a variety of causes, including inadequate nutrition, pregnancy, hormone imbalances, bad diet, medication, environmental conditions, Thus, preventative measures like Enquire with your physician about any supplements and medications you take that may contribute to hair loss. Keep your hair safe from UV light sources such as sunlight. These are some possible justifications for looking into hair oil derived from banyan tree aerial roots.

Here are some potential reasons to investigate hair oil from aerial roots of the Banyan tree:

Scientific Reasons:

1. Unique Phytochemistry: Aerial roots may contain distinct bioactive compounds not found in other plant parts.
2. Unexplored Therapeutic Potential: Investigating aerial root oil may reveal novel hair care benefits.
3. Antioxidant and Anti-Inflammatory Properties: Banyan tree extracts have shown antioxidant and anti-inflammatory activities, which could benefit hair health.

Market and Economic Reasons:

1. Growing Demand for Natural Hair Care: Consumers seek natural, sustainable, and effective hair care products.
2. Untapped Market Potential: Banyan tree aerial root oil could fill a niche in the hair care market.
3. Economic Empowerment: Sustainable harvesting and production could benefit local communities.

Traditional and Cultural Significance:

1. Ayurvedic and Folk Medicine: Banyan tree aerial roots have been used in traditional medicine for hair care.
2. Cultural Heritage: Investigating aerial root oil honors traditional knowledge and cultural practices.

Environmental Reasons:

1. Sustainable Resource: Aerial roots are a renewable resource, reducing the environmental impact of harvesting.
2. Eco-Friendly Alternative: Plant-based hair oil reduces reliance on synthetic chemicals.
3. Conservation Efforts: Research promotes sustainable harvesting and conservation of Banyan trees.

Innovation and Technological Advancements:



1. Novel Extraction Methods: Developing efficient extraction techniques for aerial root oil.
 2. Standardization and Quality Control: Establishing standards for aerial root oil quality and purity.
 3. Formulation and Product Development: Creating effective hair care products incorporating aerial roots oil.
- Selection of effective method of preparation
 - Experimental design
 - Formulation and preparation of hair oil.
 - Comparative study
 - Result & discussion
 - Conclusion
 - Reference

Drug Profile: -

Plan Of Work: -

- Selection of pure drug
- Preparation of material and Methods

Ingredients:

Ficus Benghalensis



Fig 1.1 Ficus Benghalensis

Synonym:- Banyan tree

Biological source: Banyan tree (Ficus benghalensis), Fig tree (Ficus carica)

Description Colour: - Brown

Odour: - Aromatic

Family: Moraceae

Chemical Constituents: -

1. Flavonoids (e.g., quercetin, kaempferol): Stimulate hair growth, reduce inflammation.
2. Phenolic acids (e.g., ferulic acid, cinnamic acid): Enhance hair growth, antioxidant properties.
3. Alkaloids (e.g., ficine, figarin): May stimulate hair growth, improve scalp health.
4. Saponins: Help cleanse scalp, promote hair growth.
5. Terpenoids (e.g., lupeol, ursolic acid): Anti-inflammatory, antioxidant, promote hair growth.
6. Vitamins (e.g., vitamin C, E): Antioxidant properties, promote healthy hair.
7. Minerals (e.g., zinc, copper): Essential for hair growth, strength.
8. Amino acids (e.g., arginine, lysine): Building blocks for hair protein.

9. Fatty acids (e.g., oleic acid, linoleic acid): Nourish hair follicles.
 10. Phytosterols (e.g., β -sitosterol): Help maintain hair strength, shine.
 11. Glycosides (e.g., flavonoid glycosides): Enhance hair density, reduce hair loss.
 12. Tannins: May help reduce hair loss, promote hair thickness.
 13. Resveratrol: Antioxidant, anti-inflammatory, promotes hair growth.
 14. Catechins: Antioxidant, may help reduce hair loss.
 15. Squalene: Antioxidant, moisturizes hair follicles.
 16. Azulene: Anti-inflammatory, soothes scalp irritations.
 17. Cinnamic acid: Anti-inflammatory, antimicrobial properties.
 18. Ferulic acid: Antioxidant, anti-inflammatory, reduces dandruff.
 19. Lupeol: Anti-inflammatory, antimicrobial, reduces dandruff.
 20. Ursolic acid: Anti-inflammatory, antimicrobial, promotes scalp health.
 21. Anthocyanins: Antioxidant, anti-inflammatory.
 22. Carotenoids (e.g., lycopene, β -carotene): Antioxidant, protect hair from damage.
 23. Polysaccharides: Help retain moisture, soothe scalp
- Uses: -**
- 1) Hair Growth: Banyan tree aerial roots stimulate hair growth, strengthen hair follicles, and promote thick, lustrous hair.
 - 2) Dandruff and Scalp Issues: Antifungal and antibacterial properties soothe and calm the scalp, reducing dandruff and itchiness.
 - 3) Hair Loss: Reduces hair fall, prevents baldness, and promotes new hair growth.
 - 4) Gray Hair: May help prevent or reverse premature graying.
 - 5) Hair Strength: Strengthens hair strands, reducing breakage and split ends.
 - 6) Scalp Infections: Treats scalp infections, ringworm, and other fungal infections.
 - 7) Itching and Irritation: Soothes itching, redness, and irritation on the scalp.
- Coconut Oil: -**



Fig 1.2 Coconut Oil

Synonym: - Coconut oil, Coconut butter, Copra oil.

Biological source: - Coconut oil is the oil expressed from the dried solid part of endosperm

of coconut, *Cocos nucifera* L., belonging to family Palmae.

Description

Colour: - Pale Yellow

Odour: - Odorless

Taste: - Tasteless

Chemical Constituents: -

Stearic acid

Palmitic acid

Myristic acid Lauric acid

Protein

Vitamins and essential fatty acids

Uses

Relieve dandruff

Restore luster

Damaged hair

Tame frizz

Protect hair against styling damage

Vitamin E (Preservative):-

Vitamin E is a common ingredient in hair oils due to its various benefits for hair health. Here's how it can help:

1. Promotes Hair Growth: Vitamin E improves blood circulation to the scalp, which can promote hair growth and prevent hair loss.
2. Improves Scalp Health: Its antioxidant properties help reduce oxidative stress on the scalp, improving overall scalp health and potentially preventing conditions like dandruff.
3. Prevents Hair Damage: Vitamin E helps to strengthen hair strands, preventing split ends, dryness, and breakage. It also helps to lock in moisture, keeping the hair hydrated and shiny.
4. Boosts Shine: It smooths the hair cuticle, making the hair appear shinier and more manageable. To use Vitamin E in hair oil, you can either buy hair oils containing Vitamin E or mix Vitamin E oil with a carrier oil (like coconut, argan, or jojoba oil) and apply it to your scalp and hair. Leave it on for about 30 minutes to an hour before washing it out for maximum benefits.



Fig 1.3 Vitamin E

Hibiscus Flower

Hibiscus is a popular plant known not only for its vibrant flowers but also for its various health benefits, particularly for hair care. Here's a detailed look at how hibiscus can benefit hair growth

1. Promotes Hair Growth

Hibiscus is rich in vitamins, amino acids, and antioxidants, which contribute to its ability to promote hair growth. Key compounds include:

Vitamin C: Essential for collagen production, which strengthens hair follicles and promotes growth. **Amino Acids:** The building blocks of proteins, particularly keratin, that are essential for strong hair. **Flavonoids:** These antioxidants help to improve blood circulation to the scalp, stimulating hair follicles.

2. Reduces Hair Loss

Hibiscus can help reduce hair fall in several ways:

Nourishes the scalp: The plant's oils and nutrients help nourish the scalp, which strengthens hair roots. **Prevents premature graying:** Hibiscus contains anthocyanins, which can help maintain the natural color of your hair. **Balances scalp oil production:** It helps balance the oil production on the scalp.



Fig 1.4 Hibiscus Flower

MATERIALS AND METHOD: -

Formulation no. 1

Table No. 10.1 List of materials

Sr. No.	Ingredients	Uses	Quantity
1.	Aerial Roots	Use to Treat Hairfall	10 gm
2.	Coconut Oil	Used for the Nourishment of hair	30 ml
3.	Vitamin E	Antioxidant and Preservative	5 %
4.	Hibiscus Flower	Improve shine and Texture	4-5 Flower

Drugs and Chemicals: - Ficus Bengaleses, Coconut Oil, Vitamin E

Glassware and Instrument: - Funnel Glass rod, Filter paper, Beaker, Petri Plate, Bottle

Formulation no.2



Table No. 10.2

Sr. No.	Ingredients	Uses	Quantity
1.	Aerial Roots	Use to Treat Hairfall	20 gm
2.	Coconut Oil	Used for the Nourishment of hair	60 ml
3.	Vitamin E	Antioxidant and Preservative	10 %
4.	Hibiscus Flower	Improve shine and Texture	8-10 Flower

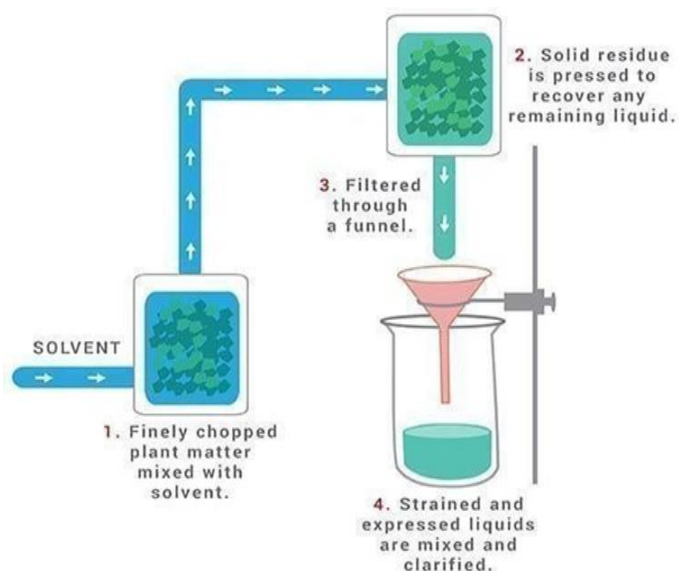
Formulation no. 3**Table No. 10.3**

Sr. No.	Ingredients	Uses	Quantity
1.	Aerial Roots	Use to Treat Hairfall	5 gm
2.	Coconut Oil	Used for the Nourishment of hair	15 ml
3.	Vitamin E	Antioxidant and Preservative	2.5 %
4.	Hibiscus Flower	Improve shine and texture	10-15

Maceration: -

Maceration oil, also known as infused oil, is a type of herbal oil extraction method where plant materials (leaves, flowers, roots, or seeds) are

steeped in a carrier oil to release their bioactive compounds, aromas, and colors. The resulting oil contains the extracted plant properties, which can be used for therapeutic, cosmetic, or culinary purposes.

**Fig 2.1 Maceration****Advantages of Maceration Oil:**

1. Simple and cost-effective extraction method.
2. Gentle process preserves delicate plant compounds.
3. No heat or chemicals are required, ensuring minimal degradation.
4. Easy to perform at home or on a small scale.

Disadvantages of Maceration Oil:

1. Time-consuming process (typically 2-6 weeks).
2. Limited control over extraction efficiency and consistency.
3. Risk of oil spoilage or rancidity if not properly stored.
4. May not be suitable for extracting water-soluble compounds.

Types of Maceration Oils:

1. Cold maceration: performed at room temperature.
2. Warm maceration: performed at slightly elevated temperatures (30°C - 40°C).
3. Solar maceration: uses sunlight to facilitate extraction.

Common Carrier Oils for Maceration:

1. Olive oil
2. Coconut oil

3. Jojoba oil
4. Sweet almond oil
5. Grapeseed oil

Applications of Maceration Oil:

1. Skincare and haircare products
2. Aromatherapy and perfumery
3. Natural remedies and herbal medicine
4. Massage oils and body treatments
5. Food and beverage flavorings (e.g., infused olive oils)

Preparation of Hair Oil: -

- 1) Select the plant material is finely cut, crushed, or ground into moderately coarse powder Take 10 gm of coarse powder coarse powder is placed in a closed vessel.



Fig 3.1 Coarse Powder

- 1) Solvent (Menstruum) is added 30 ml coconut oil.
- 2) The mixture is allowed to stand for 1 week and is shaken occasionally added in beaker.
- 3) The liquid is strained by using filter paper and butcher funnel.
- 4) Solid residue (Marc) is pressed to recover any remaining liquid.
- 5) Strained and expressed liquids are mixed.
- 6) Liquid are clarified through filtration.

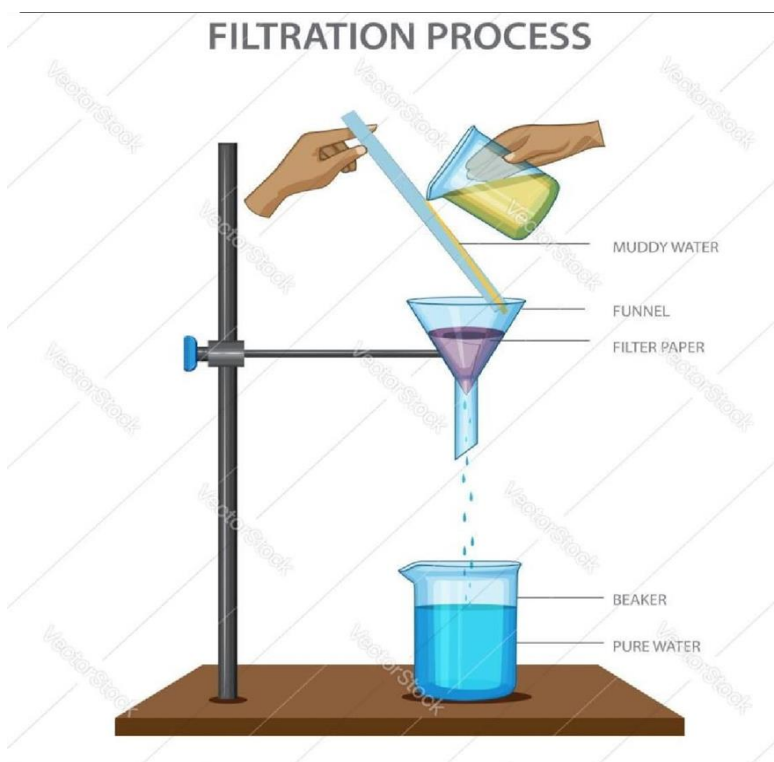


Fig 3.2 Filtration

- 1) The crude drug is obtained within macerated oil and then add 5 % vitamin E.
- 2) The mixture keep aside for 8 to 10 days. Then boil for 20-30 min .
- 3) After that oil kept at room temperature
- 4) Oil is stored in well closed container and it is ready to use.



Fig 3.3 Hair Oil

Evaluation Test:

- 1) **Colour :-** The colour of the oil was checked by visually and it was pale yellow.
- 2) **Odour :-** The formulation was evaluated for its odour by smelling it And it was aromatic.
- 3) **pH:-** pH of 1% solution of the formulation was measured by using a calibrated digital pH

meter at constant temperature. And it was found to be 6.4

- 4) **Viscosity Measurement:** - The viscosity of prepared herbal hair oil was estimated by Ostwald's Viscometer at a room temperature. The viscosity of prepared herbal hair is measured.
- 5) **Skin Irritation :-** oil was applied on hand and exposed to sunlight. Wait for 5 min and check for any irritation on skin.
- 6) **Stability:-** Stable at room temperature
- 7) **Sedimentation :-** No sedimentation
- 8) **Home Use and Self-Reported Observations:**
Uses of hair oil could keep detailed journals to

track any subjective changes they notice in hair growth, thickness, and overall health of their scalp.

RESULT AND DISCUSSION: -

The final formulation was performed various test. all the result were recorded. The formulation was also Effective , good in taste, stimulating, and refreshing.

Observation table:-

Table No. 11.1

Sr no.	Parameters	Observation
1	Colour	Yellow
2	Odour	Aromatic
3	Consistency	Good
4	Homogenicity	Good
5	PH	6.4
6	Grittiness	Smooth
7	Sensitivity	Non Sensitive
8	Skin Irritation	Non Irritant
9	Accelerated Stability Test	Stable
10	Viscosity	0.93

CONCLUSION:

This hair oil provides nutrients which is required for hair growth. This oil is very beneficial for decreasing hair loss and promoting hair growth. Regularly use of (at least 6 months) use of this oil provide beneficial effects. The formulated hair oil will help in maintaining good growth of hair, not only that it also provides turning grey hair to black, protects from dandruff, reduces stress etc.

prepared and evaluated by various parameters like pH, viscosity, acid value etc. Over all this herbal oil have significant quality. ficus benghalensis-based hair oil could be a natural remedy for promoting healthy hair and scalp, helping to

reduce hair loss and conditions like dandruff. However, more scientific studies are needed to fully understand its efficacy and safety in hair care. Ficus benghalensis is believed to offer several potential benefits due to its rich phytochemical composition. It is thought to promote hair growth, reduce dandruff, and improve scalp health due to its anti-inflammatory, antimicrobial, and antioxidant properties.

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