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### FORMULATION AND EVALUATION OF HERBAL HAIR OIL FROM ARIAL ROOTS OF BANYAN TREE BY USING OLIVE OIL AS AN BASE

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#### Abstract:

This research paper explores the formulation and evaluation of herbal oil derived from the aerial roots of the Banyan tree, scientifically known as *Ficus benghalensis*. The study investigates the extraction process, physicochemical properties, and potential therapeutic benefits of the herbal oil. Various parameters such as yield, pH, viscosity, and antioxidant activity are assessed to determine the quality and efficacy of the formulated oil. Additionally, antimicrobial and anti-inflammatory properties are evaluated to explore potential applications in skincare and traditional medicine. The findings provide valuable insights into harnessing the medicinal properties of Banyan tree aerial roots for the development of natural herbal remedies.

**Key words:** Aerial root of banyan tree, Hair oil, Olive oil, Hair fall

#### Introduction:

The quest for natural remedies and sustainable beauty solutions has fueled research into traditional herbal ingredients. Among these, the aerial roots of the Banyan tree (*Ficus benghalensis*) have garnered attention for their potential benefits in hair care. In this study, we delve into the formulation and evaluation of hair oil derived from these aerial roots, aiming to explore its efficacy and potential as a natural alternative in hair care<sup>[3]</sup>. The Banyan tree, deeply

rooted in Ayurvedic and traditional medicine, has been revered for its therapeutic properties for centuries. Its aerial roots, rich in essential nutrients, have been traditionally used to address various health and wellness concerns. Recent scientific inquiries have shed light on the biochemical composition of these roots, revealing promising attributes for hair health. The formulation of hair oil from Banyan tree aerial roots involves a meticulous process of extraction and blending to harness their beneficial components. This includes phytochemicals such as flavonoids, phenols, and saponins, which are known to nourish the scalp, strengthen hair follicles, and promote hair growth<sup>[12]</sup>. Additionally, the oil may possess antioxidant and antimicrobial properties, offering protection against environmental damage and scalp infections. However, the efficacy of this natural hair oil must be rigorously evaluated through scientific methods<sup>[8]</sup>. Parameters such as hair growth stimulation, scalp health improvement, and hair texture enhancement need to be assessed through *in vitro* and *in vivo* studies. Furthermore, considerations such as stability, sensory attributes, and safety profiles are vital in determining the feasibility of incorporating this oil into mainstream hair care products. In this research paper, we embark on a journey to explore the formulation and evaluation of hair oil derived from Banyan tree aerial roots<sup>[2]</sup>. By elucidating its potential benefits and efficacy, we aim to contribute to the growing body of knowledge surrounding natural remedies in hair care and pave the way for sustainable, nature-inspired solutions in the beauty industry<sup>[1]</sup>.

*Ficus Bengalese*'s Linn, commonly known as banyan tree is considered to be a sacred tree in India<sup>[5]</sup>. It is a large evergreen tree distributed all over India from sub Himalayan region to the deciduous forest of Deccan and South India<sup>[1]</sup>. It is an evergreen tree, grows up to 30 meters, with spreading branches and many aerial roots. Preliminary phytochemical investigation of roots of *Ficus Bengalese*'s indicated the presence of carbohydrates, flavonoids, amino acids/proteins, steroids, saponins and tannins<sup>[6,13]</sup>. The bark leucopelargonidin-3-O-X-L rhamnoside, leucocynidin, 3-O-X-D galactosylcellobioside, glucoside- $\beta$ -glucoside, 20-tetratria conthene-2-one, 6-hepatatria contene-10- one, pentatricentan -5-one,  $\beta$ -sitosterol-  $\alpha$  -Dglucose<sup>[2,3,4]</sup>. *Ficus Bengalese*'s root extract and its compound are used increasing hair growth and decreasing hair loss. Methods of producing the extracts and isolating the compounds are also disclosed. The aerial root portion optionally comprises an aerial root tip. The method typically involves preparing a crude extract of an aerial root portion of a *Ficus* plant, optionally the aerial root tip, and fractionating the crude extract with at least one solvent to obtain various fraction<sup>[6]</sup>. There are various causes of hair fall such as Family history (heredity), Hormonal changes and medical conditions, Radiation therapy to the head, Hairstyles and treatments also diet is most important factor for hair fall<sup>[9]</sup>. To overcome this problem we prepared the hair oil from the roots of banyan tree. It is very safe, effective and easy to use<sup>[10]</sup>.

## **Materials & Method:**

### **Methods of Preparation:**

#### **Preparation of Powder extract:**

The fresh aerial roots collected, were dried in oven at 60°C for 4-6 hours to make them moisture free and ground using an electric grinder. The resultant powder was passed through sieve no. 60 and was examined microscopically by mounting in chloral hydrate solution and phloroglucinol solution.<sup>(8,9)</sup> About 40gm of powder used for successful soxhlet extraction by using solvent like petroleum ether (60-80°C), toluene, dichloromethane, ethyl acetate,

methanol and water respectively and the percent yield of all the extracts determined. This extraction is carried out for determining the active component present in ficus root. Extracts was conducted using standard tests for alkaloids, flavonoids, phenolic, glycosides, and carbohydrates. An ethyl acetate rich extract containing flavonoids in more amount so it is prepared<sup>[22,29]</sup>.



**Fig.1 Prepared powder of aerial root of banyan tree**

#### **Preparation of hair oil:**

The roots of ficus Bengalese's was mixed into the olive oil. This mixer keep aside for 8 to 10 days. After 10 days this roots are boiled into olive oil gradually add amla, bramhi and neem for 20 to 30 min. After that keep it at room temperature for cooling. when this oil become cool then filter it by using soft cloth or filter paper. This oil is packed into well closed container oil is ready to use. Another method is make Powder of equal quantities of the aerial roots of banyan<sup>[40]</sup>.

**Table No.:1 Formulation table of hair oil**

<b>Sr. No.</b>	<b>Ingredient</b>	<b>Quantity</b>
1	Aerial root of banyan tree	6 gm.
2	Amla	5gm.
3	Bramhi	7gm.
4	Neem Powder	2gm.
5	Castor oil	30ml.
6	Olive oil	50ml.

Hair loss, also known as alopecia or baldness, refers to a loss of hair from part of the head or body. Common types include male- or female-pattern hair loss, alopecia aerate, and a thinning of hair known as telogeneffluvium<sup>[28]</sup>. Hair fall are mostly occurs in female due to various reasons like poor nutrition, in pregnancy, hormonal imbalance, poor diet, medication environmental factors etc<sup>[30]</sup>. So prevention must be taken such as Ask your doctor about medications and supplements you take that might cause hair loss. Protect your hair from sunlight and other sources of ultraviolet light<sup>[33]</sup>.



**Fig. 2 Formulated Herbal Hair oil**

**Evaluation:**

**1. Organoleptic Property:**

**Colour:** Detected by naked eyes

**Odour:** Odour detected by nose.

**Sensitivity:** Applied to the skin and exposed to the sunlight for 5 minutes to check for any irritation over skin

**Grittiness:** Rubbed to the skin and observed  
**Sedimentation:** Keep the whole preparation aside for overnight and check for sedimentation

**2. pH Determination:** Take a pH paper and dip into the formulated hair oil and check for the colour change.

**3. 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.

**4. Acid Value:** 10 ml of oil was added with 25ml of ethanol and 25ml of ether. Phenolphthalein was added as indicator and titrated with 0.1M Potassium hydroxide solution  
 $n = \text{Number of ml of 0.1M KOH} \times \text{Wt. of oil}$

**5. Specific Gravity:** Specific gravity of the prepared oil was determined using specific gravity bottle.

**6. skin irritation :** Oil was applied on hand and exposed to sunlight for 5mins to check for any irritation over skin<sup>[41,44,47]</sup>.

**Results & Discussion:**

**Results:**

**Table No.: 2 Evaluated results of herbal hair oil are as follows:**

Sr. No.	Evaluation Parameter	Inference
1	pH	5
2	Acid Value	5.4
3	Sensitivity	Non-Sensitive

4	Colour	Dark Yellow
5	Odour	Pungent
6	Grittiness	Smooth
7	Skin Irritation	No-Irritation

**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. This oil was prepared and evaluated by various parameters like pH, viscosity, acid value etc. Overall this herbal oil have significant quality.

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**Conflict of interest:**

The authors declare no conflict of interest.

**Authors Contribution:**

We declare that this work was created by the author named in this article and that all liability related to claims related to the content of this article rests with the author.

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