

## A STUDY ON HERBAL HAIR OIL

**Bhosale vaishnavi  
Prakash**

Students, Bachelor of  
Pharmacy,  
Shri Sai Institute of  
Pharmacy & Research  
Chhatrapati  
Sambhajinagar,  
Maharashtra, India.  
nikitaghorpade800@  
Gamil.com

**Sapna ghuge**

Assistant Professor,  
Department of Pharmacy,  
Shri Sai Institute of  
Pharmacy & Research  
Chhatrapati  
Sambhajinagar,  
Maharashtra, India.

**Dr. Kavita Kulkarni**  
Principal

Department of Pharmacy,  
Shri Sai Institute of  
Pharmacy & Research  
Chhatrapati  
Sambhajinagar,  
Maharashtra, India.

### **Abstract :**

*Herbs and herbal medications have been shown in studies to promote hair growth. Men and women alike are very concerned about hair loss issues, with fading, dandruff and hair falling being the main issues linked to hair loss. Comparing herbal hair oils to synthetic drugs, which can have adverse effects like burning, itching and localized irritation, has drawn attention to these alternatives. They could result in systemic adverse effects such as headaches and dizziness as well as dermatological reactions. Therefore, the creation of herbal hair oil is necessary to stop hair loss and promote strong hair growth without causing any negative side effects. There are several synthetic medications available for hair loss, but they have serious adverse effects and don't provide permanent relief.*

*The primary goal of this endeavor is to create a herbal hair oil formulation that can address issues with hair loss and other hair-related conditions. For the creation of the hair oil, herbs as hibiscus, amla, shikakai, Fenugreek seeds, coconut oil, almond oil and neem oil were chosen. After being prepared, the hair oil was assessed.*

*The formulated herbal oil was evaluated by using Various parameters such as Organoleptic properties, Specific gravity, stability, viscosity, Acid value, pH etc. and the value obtained from it are found to be Similar to that of the standard values like there is no Sedimentation, no grittiness and shows satisfying Organoleptic properties and the results were Determined and are reported in this work.*

### **Keywords :**

*Herbal Hair Oil, Hair Care, Natural  
Ingredients, Hair Growth, Anti-Dandruff, Hair Fall*

*Prevention, Herbal Formulation, Sustainable Hair  
Care.*

### **Introduction :**

Hair is essential to human existence. In India, the custom involves mixing different medications that promote hair growth with hair oils. Given that Indian women are renowned for having long, glossy and healthy hair, it is not unexpected that hair care is a major component of their selfcare routines. The canonical text on Ayurvedic medicine, the Charka Samhita, stresses the need of oiling the scalp and hair in order to preserve healthy hair and stop hair loss. It was advised to oil your hair every day using suitable herbs that suited other ingredients and this practice has persisted to this day.

The preparations for hair oil are included to treat split ends, dandruff and other issues. The main purpose of hair oil preparations is to cool the scalp in order to promote luscious hair development in both men and women. Different types of oils, such as castor, coconut, almond and onion oils, are administered topically to the scalp in combination with appropriate herbal medications. Because it absorbs into hair strands more effectively than other oils and is more costeffective than other oils, coconut oil is the most deserving oil base of them all. For the finest hair development, coconut oil mixed to herbal

medications is the recommended way.

Our head hair serves as our first line of defense against UV radiation from the sun. Hair care products are nothing more than formulas designed to alter the texture of hair. Because they have fewer side effects and are made using readily available components, herbal cosmetics are very popular. These days, herbs are added to hair care cosmetics and their effects are more noticeable than those of synthetic ingredients. Because hair oils are beneficial in treating hair issues, their use in hair care routines has increased in recent years.

Hair oils are composed of both synthetic and natural ingredients. Because of the growing interest in herbal cosmetics among people, as well as the fact that their ingredients are readily available and their effectiveness is greater than their minimal adverse effects, herbal cosmetics are in high demand. An integral component of herbal cosmetics is herbal hair oil. Herbal hair oil is increasingly widely utilized and preferred for many hair conditions. In addition to encouraging hair growth, they also give the scalp the essential moisture, which results in gorgeous hair. Hair tonics are made of herbal oils that also contain herbal medications. Many vital nutrients found in herbal hair oil are crucial for preserving the sebaceous gland's regular function and encouraging the growth of hair on its own. These are one of the most well recognized products for the treatment of hair. The use of hair oil is increasing every day in line with the improvement in standard of living of people to give natural flavors and colors to hair oil the herbal essences and perfumes are added.

Hair oils can be made in a variety of ways, including direct boiling, paste and cloth processes. The evaluation of formulation is the next major step after preparation. The therapeutic efficacy of the product is the next and final phase. The major goal of our study is to develop and test herbal hair oil for hair growth improvement.

There are different types of *evaluation test* for hair oils such as ;

- Acid value test ☒
- Saponification test ☒ • Viscosity ☒
- Specific gravity ☒ • Ph etc.

## 1. HAIR

Hair is one of the characteristics features of mammals and has various function such as protection against external factors i.e. heat, cold, etc. Hair is one of the important parts of body considered to be protective appendages on the body and Accessory structure of the integument along with Sebaceous gland and sweat gland.

### 1.1. Structure of Hair:

☒ # Hair consists of two parts:

A) Hair Follicle

B) Hair Shaft



### STRUCTURE OF HAIR

#### A) Hair Follicle :

The Follicle is a structure in the skin that resembles a club. There can be a network of blood vessels at the top of the follicle that supply nutrients to nourish and promote hair growth. We refer to this as the papilla. Every follicle is the result of a communication between the dermis and epidermis. The follicle is segmented into three parts:

1. **Infundibulum:** extends from the follicle's surface opening to the sebaceous gland entrance level.
2. **Isthmus:** Extends from infundibulum to the level of insertion of arrector pili muscle.
3. **Inferior segment:** The base of bulb is invaginated by a tuft of vascularized loose connective tissue called dermal papilla. The papilla of the hair contains many blood vessels and provides nourishment for hair growth

#### B) Hair Shaft :

The hair shaft is divided into three layers:

1. **Medulla:** The medulla is the centre section of hair. It will either be continuous or doubled, or it will be divided or segmented. They are often packed with cells or resemble a hollow tube. The medulla is absent from the majority of hairs, but it might be broken or discontinuous in others. It creates the hair shaft's midsection. Particularly fine hairs typically lack this layer.
2. **Cortex:** The greatest portion of the hair shaft, or melanin (hair pigment), is what gives hair its colour.
3. **Cuticle:** The hair shaft's transparent outer coat may be called the

cuticle. It is constructed from overlapping scales that shield the hair's inner layers. The hair's proximal end, which is closest to the scalp, and distal end are where the scales point.

#### 1.2. Hair Types :

Hair type is primarily based on the curl pattern of the hair, which is determined by the hair follicle. Genetics play a key role in determining hair type. Andre Walker, who has been Oprah Winfrey's stylist for decades, is credited with creating a system that classifies hair into one of four curl patterns. ☒

Type 1: Straight ☒

Type 2: Wavy ☒

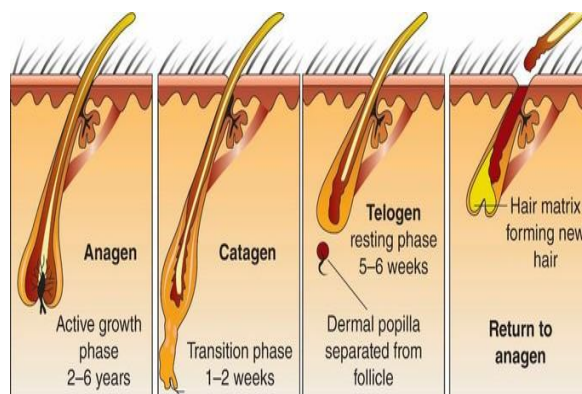
Type 3: Curly ☒

Type 4: Coily

#### 1.3. Hair Growth Cycle :

Hair growth cycle consists of 3 stages: -

1. Anagen stage (Growth)
2. Catagen stage (Transition)



Telogen stage (Rest)

Fig 3: Hair growth cycle

#### 1. Anagen phase: -

The anagen phase is the growth phase of the hair. The Anagen phase will last from Between 2-6 years. A new hair pushes the new hair that stopped growing up and out of the follicle.

## 2. Catagen phase: -

The catagen phase is a transitional stage and 3% of all hairs are in this phase at any given time. This phase lasts for 2-3 weeks.

## 3. Telogen phase: -

The telogen phase is the resting phase which lasts for about 2-3 months. During the telogen phase, the hair follicle is at rest and the Club hair is completely formed.

## 2. HAIR OIL

Hair care products include hair oil. Hair care products are characterized as compositions intended to cleanse, alter the texture of hair, nourish the hair, and preserve the appearance of healthy hair.

Hair oils are hair care products that are used to the hair to address conditions like baldness, graying hair, hair loss, and dry hair. They also aid in nourishing the hair.

Due to the growing interest in herbal cosmetics among people, as well as the fact that their ingredients are readily available and their effectiveness is greater than that of their synthetic counterparts, herbal cosmetics are in high demand.

A crucial component of herbal cosmetics is herbal hair oil. Herbal hair oil is increasingly widely utilized and preferred for many hair conditions.

The use of hair oil is growing daily in tandem with people's rising standards of living. Herbal essences and scents are added to hair oil to give it natural flavors and colors.

### **Types of Herbal Hair Oil Available in Market :**

1. Amla hair oil
2. Coconut hair oil
3. Bhringraj hair oil
4. Jasmine hair oil
5. Brahmi hair oil
6. Cantharidin hair oil

## 7. Onion hair oil

### **Benefits :**

It gives hair its natural sweetness.

Vitamins and micronutrients found in herbal oil serve as sustenance for hair. Hair oil is a great way to tame frizzy hair and prevent hair loss.

Herbal oil provides hair ends with the pampering and nourishment they require. The problem of premature grey hair can be resolved by regularly using hair oil. Prevents dandruff, enhances hair growth and keeps the scalp hydrated.

- Presents a radiant radiance.
- Reduction of stress.

### **Common Hair Diseases:**

1. Natural diseases of hair growth
2. Acquired diseases of hair growth
3. Dandruff
4. Split Ends.
5. Frizzy Hair
6. Short Crown

### **HISTORY:**

Hair oiling has its origin in Ayurveda, one of the prominent schools of medicine that offers holistic solutions. It originated more than 5,000 years ago and continues to benefit the mind, body, and soul. When you massage oil into your hair, you do not just strengthen your tresses, but also indulge in self-care Hair oiling has been a part of hair care routines in several cultures. Dating back all the way to Ancient India, the centuries-old Indian science of Ayurveda involves hair oiling as one of its wellness methods.

**Objectives** of the present study are as follows:

Herbal hair oil is one of the most well recognized hair treatments. Herbal hair oil not only moisturizes scalp but also reverses dry scalp and dry hair condition. It

provides numerous essential nutrients required to maintain normal function of sebaceous glands and promotes natural hair growth.

Natural goodness of hair

Relaxing massage for healthy scalp Fights against hair fall

Control frizzy hair

To promote the hair growth and smoothness of the hair.

To supplement the hair with vital nutrients such as vitamins, and minerals. To prevent the dandruff, spit ends, and dull hair.

To provide an alternative source from hazardous chemicals.

Enhance hair growth by stimulating hair follicles and improving blood circulation to the scalp. Reduce hair fall by strengthening hair roots and minimizing damage from environmental factors and styling.

Provide essential nutrients to the hair and scalp, improving hair texture, shine, and manageability.

Increase hair strength and resilience, reducing breakage and split ends

Hydrate the scalp and hair, preventing dryness and promoting a healthy moisture balance.

Offer a natural alternative to synthetic hair care products, reducing the risk of allergic reactions and other side effects.

Improve hair density and volume, making hair appear fuller and healthier.

Shield hair from damage caused by pollution, UV rays, and other environmental stressors.

**Plan of work:**

The plan of work is having following points,

1. Sampling
2. Data collection
3. Tools of analysis

**Material & Methods**

**Materials :** Coconut oil, Curry Leaves,

Amla fruit, Fenugreek seed, Hibiscus flowers, Hibiscus leaves and Nagarmotha roots are used.

**Raw material characterization :**

**1. COCONUT OIL**

**Family-** Aceraceae.

**Scientific name-** Cocos nucifera L.

**Other names:** Fossil oil.

Grease Lubricating oil kernel oil.

**Geographical location:** Southern India.



**COCONUT OIL**

**Active constituents-** Fatty acid, capric Acid, lauric acid.

**Uses-** Used as vehicle,

promotes hair growth Moistures the hair follicles

Coconut oil nourishes the scalp and proffer shine to the hairs.

Used in industrial applications for cosmetics and detergent production  
Coconut oil is used as A meals oil.

# Coconut oil is derived from milk of coconut palm fruit

2. **CURRY LEAVES**

**Family-** Rutaceae.

**Scientific name-** Murraya koenigii.

**Other names:** karivepallai, karivembu, karivepaku, kadipatta

**Parts used-** Leaves.

**Geographical location:** Subtropical and tropical region through the Asia.

**Active constituents-** Bismahanine, murrayanine, murrayazolinol.



**CURRY LEAVES**

**Uses:**

Promotes hair growth and strengthens hair roots. Help moisturize the scalp and remove the dead hair follicles. Preventing hair loss and thinning of hair.

3. **FENUGREEK SEED**

**Family-** Fabaceae

**Scientific name-** Trigonella foenum-graecum.

**Parts used-** Seeds.

**Geographical location:** Maharashtra.

**Active constituents-** Trimethylamine, Trigonelline, Quercetin.

**Other names:** Herbaceous plant.



Methi, Trigonella.

**FENUGREEK SEEDS**

**Uses :**

- Reduce dandruff, Promotes hair growth and shows anti-fungal activity.

Fenugreek seeds (Methi curb) stop hair fall and strengthens your hair from root to tip.

Fenugreek seeds also have high protein and nicotinic acid content, which are known to be beneficial against hair fall and dandruff.

Fenugreek dried seed are known for their valuable antibacterial, Anticancer and anti-inflammatory properties. These seed are also known to work as anti-oxidants having reviving properties

4. **AMLA POWDWER**

**Family-** Euphorbiaceae

**Biological Name:** Phyllanthus Emblica

**Parts used:** Fruit powder

**Other Names:** Indian gooseberry, Bhumi amla, Bhumyamalki

**Active Constituents-** Vitamin C, Tannins, Phenols

**Uses :**

- Reduce premature pigment loss from hair, or greying.
- Stimulate hair growth.
- Reduce hair loss.



**AMLA POWDER**

Phyllanthus emblica is an important medicinal plant in Indian traditional system of medicine. The tree is of 1-8 meter in height. The leaves are simple and intently set alongside branchlets. The flowers are of greenish yellow colour. The Fruit is nearly round in shape and having hard appearance. One amla contains up to 80 percent moisture making it a great natural skin conditioner.

**5. HIBISCUS FLOWER & LEAVES**

**Family:** Malvaceae

**Botanical name:** Hisbiscus rosa-sinensis

**Other names:** Hibiscus arnottii Griff.

Hibiscus boryanus DC. Hibiscus cooperi auct.

**Active Constituents-** flavonoids, tannins

**Parts Used:** Whole flower & leaves

**Uses:**



- Hibiscus flowers are used to clout.
- Premature greying of hairs.
- Prevent hair loss and spilt ends.

**HIBISCUS FLOWER & LEAVES**

*The leaves are alternate, ovate to lanceolate, frequently with a toothed or lobed Margin. The flowers are large conspicuous, trumpetshaped with five or more Petals. This plant is extensively cultivated as an ornamental plant in tropical and Subtropical region. This plant is commonly found throughout the tropics and Is found as a house plant throughout the world.*

**6. SHIKAKAI**

**Family:** Fabaceae

**Botanical name:** Senegalia rugata

**Other Names :** Sigaikaai , Sigaikaai , soap pod wattle

**Chemical constituents :** Alkaloids, Natural sugars - Glucose, Arabinose & Rhamnose. Tartaric Acid,Citric Acid, Ascorbic Acid, Nicotine

**Parts Used :** the leaves and young shoots



**SHIKAKAI**

**Uses :**

- Powder of bark, leaves or pods is used as hair conditioner.
- It cleanses the hair, removes excess oil and dirt, makes hair soft and detangle it. • It strengthens the hair roots and promotes hair growth.
- It also works against dandruff. In Jaundice,
- leaves of shikakai is used with black pepper. It can cause purgation or sometime it leads to vomiting.

**7. ALMOND OIL**

**Family:** Rosacea

**Botanical name:** Prunus amygdalus

**Other Names :** Sweet almond, Badam

**Chemical constituents :** About 68% of the oil was discovered to be oleic acid, 25% to be linoleic acid, 4.6% to 4.8% to be palmitic acid and a little amount of palmitoleic acid and stearic acid ,Arachidic acid was also detected in trace amounts.

**Parts Used :** Seeds, Leaves & Bark



**ALMOND OIL**

**Uses :**

- Almond oil is used as a scalp treatment.
  - Its fungicidal and antibacterial qualities enable it to effectively balance the yeast responsible for dandruff.
  - Almond oil works effectively to moisturize the scalp, clean the hair follicle, reduce frizz and repair damaged hair since it absorbs well into the epidermis.
    - Apply a dime-sized amount or less to the end of hair before drying to hydrate and decrease frizz.
    - Almond oil rich in vitamin E is used in the treatment of hair loss and strengthens the hair

**8. NEEM OIL**

**Family:** Meliaceae

**Botanical name:** Azadirachta indica

**Other Names :** Neem, Margosa, Neem tree or Indian lilac

**Chemical constituents :** Main chemical components are nimbin, nimbinene, azadirachtin, azadirachtol, azadirachnol, desacetynimbinene, nimbandiol, nimbolide, quercetin, betasitosterol, n-

hexacosanol, nimbiol and nimocin  
**Parts Used :** Seeds, Leaves & Bark



*Its fruits and seeds are the source of Neem Oil.*

**NEEM OIL**

**Uses :**

1. Cures Dandruff.
2. Treat Lice.
3. Prevent Hair thinning.
4. Prevents premature greying.
5. Promotes Hair growth.
6. Conditions dry hair.
7. Treat scalp infections.

**Raw Material :**

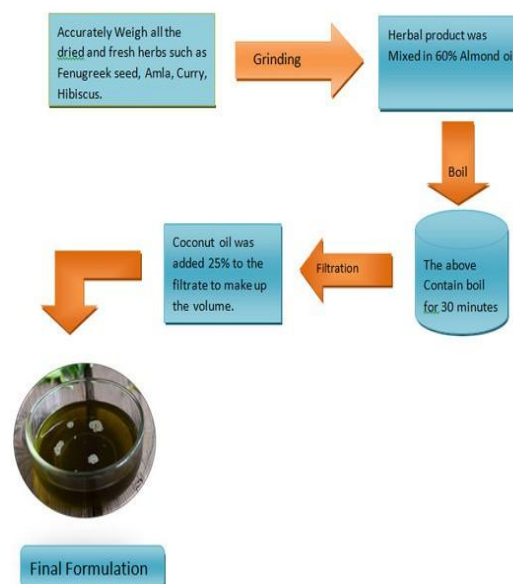


**Formula :**

Sr. No.	Ingredients	Quantity (100ml)
1	Coconut Oil	25 %
2	Curry	02 %
3	Fenugreek Seeds	04 %
4	Amla Powder	10 %
5	Hibiscus	01 %
6	Shikakai	05 %
7	Almond Oil	60 %
8	Neem Oil	03 %

**Method of Preparation :**

- Accurately weigh all the dried and fresh herbs such as, Fenugreek seed, Amla, Curry, Hibiscus.
- Herbal product was mixed in 60% Almond oil. The above content was boiled for 30 min.
  - Boiled mixture was subject for filtration through muslin cloth. After filtration coconut oil was added 25% to the filtrate to make up the volume.
- Finally, flavouring agent was added to the oil and was placed in a bottle.



**Role of Ingredients**

Ingredients	Importance
Shikakai	Anti-dandruff
Amla	Stimulate Hair Growth
Curry	Treat Damaged Hair
Fenugreek Seed	Hair Growth
Hibiscus	Stop Hair Loss
Almond Oil	Treat hair loss and strengthens the hairs
Coconut Oil	Moisturizes dry hair
Neem Oil	Reduce Dandruff

**Evaluation Of Herbal Hair Oil :**

**1. Physical appearance :**

Sr.	Parameters	Observations
01	State	Liquid
02	Colour	Greenish Brown
03	Odour	Aromatic

**2. Determination of pH :**



The pH was determined by using digital PH meter. 20ml of herbal hair oil was taken in a beaker and The bulb of PH meter was dipped in hair oil. The obtained pH values are noted down. **pH**

**3. Specific gravity:**

Initially empty specific gravity bottle was weighed. Then the same

specific gravity bottle was filled with water and again weighed. Later specific gravity bottle was replaced with hair tonic and weighed again. Weights are noted and thus specific gravity of hair oil was calculated.

- Weight of empty specific gravity bottle = w1gms.
- Weight of specific gravity bottle with water = w2gms.
- Weight of specific gravity bottle with hair oil = W3gms.
- Specific gravity bottle of water = 0.9961 g/cm<sup>3</sup>.
- Specific gravity of hair oil was calculated as  $\rho = \frac{W3-w1}{w2-W1} \times \rho_{water}$



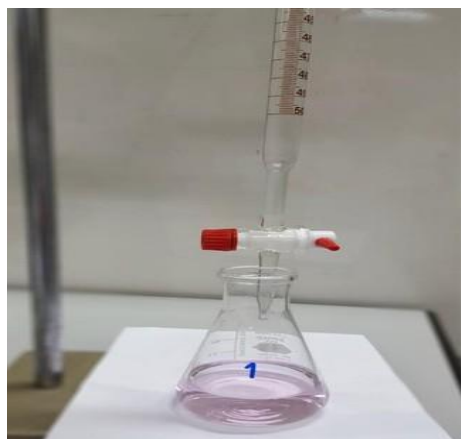
***Specefic Gravity***

**4. Acid value:**

One gram of substance was dissolved accurately in 5ml of mixture of equal volume of ethanol and ether previously neutralized with 0.1M KOH. If the sample was not dissolved properly then reflux condenser was connected and the sample was warmed slowly with frequent stirring until the sample was dissolved. Then 1ml of Phenolphthalein solution was added and titrated with 0.1M KOH until the solution remained as faintly pink after shaking for 30 minutes. Acid Value was calculated from the following equation.

*Acid value* = 5.61 x n/w

N= No. of ml of 0.1M KOH W= Weight of substance



### *Acid Value*

#### **5. Saponification Value :**

Accurately weigh 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 added. Keep the flask for 30 min and the flask was cooled. The cooled solution was titrated against 0.5 N HCl using phenolphthalein as indicator. Similarly, the blank titration was performed without taking oil (sample). The amount of KOH in mg used was calculated.

Saponification value =  $(B-S) N / W$  Where, S = ml of KOH required to neutralize the substance B = ml of KOH required for blank N= Normality of standard Hydrochloric acid. W = Weight of the sample taken for the test (g).



### *Saponification Value*

Saponification values were determined and the Formulations were subjected to biological evaluation.

#### **6. Sedimentation:**

Keep the whole preparation aside for overnight and check for sedimentation occur in oil.

#### **7. Skin Irritation Test:**

The prepared herbal oil was applied on 1 cm skin of hand and exposed to sunlight for 4-5 min.

#### **Result & Declaration :**

The herbal hair oil was prepared with combination of coconut oil, Amla fruit, fenugreek seeds, Hibiscus flowers and leaves, and curry leaves as the base of the monograph analysis was performed according to WHO guidelines.

Sr. No	Evaluation Parameter	Inference
1	State	Liquid
2	Colour	Greenish Brown
3	Odour	Aromatic
4	pH	6.2
5	Acid Value	2.24
6	Viscosity	1.07
7	Specefic Gravity	0.88 g/cm3
8	Saponification Value	194.2
9	Sedimentation	No
10	Skin Irritation	No

**Conclusion :**

The study on Formulation and Evaluation of Herbal Hair Oil successfully demonstrated the potential of herbal ingredients in developing a safe, effective, and natural solution for hair care. The formulated hair oil prepared using a blend of herbal components such as [mention key ingredients, e.g., amla, shikakai, neem, hibiscus, etc.], showed promising results in addressing common hair problems, including dandruff, hair fall, and poor hair growth.

Physicochemical evaluations such as pH, viscosity, and spreadability confirmed the product's compatibility with the scalp and hair. Stability studies indicated that the formulation remained effective under varying storage conditions, ensuring its suitability for long-term use. Efficacy testing through user trials highlighted its ability to improve hair texture, enhance growth, and reduce dandruff without causing any adverse effects.

The findings of this study underscore the advantages of incorporating herbal ingredients in hair care formulations. Herbal hair oils not

only provide therapeutic benefits but also align with the increasing consumer demand for natural, sustainable, and chemical-free products.

In conclusion, this project reaffirms the significance of herbal formulations as a viable alternative to synthetic products in the hair care industry. Further research could explore additional herbal ingredients, advanced extraction techniques, and enhanced delivery systems to optimize the formulation and broaden its applications in personal care.

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