



# “FORMULATION AND EVALUATION OF HERBAL HAIR GROWTH OIL”

Ms. Mukta Sanjay Gawande<sup>1st</sup>, Ms. Vishwaja Anil Mahalle<sup>2nd</sup>

Guidance By: Assit Prof. Shubham P. Jaiswal<sup>3rd</sup>

M. pharm (Pharmaceutics)<sup>3</sup>

Student<sup>12</sup>

Ishwar Deshmukh Institute of Pharmacy Digras , Maharashtra , India<sup>123</sup>

## ABSTRACT :

Herbal formulations have always attracted significant attention due to their efficacy and fewer side effects compared to synthetic drugs. This study aims to prepare herbal hair oil using amla, hibiscus, brahmi, and methi and evaluate its effectiveness in promoting hair growth. Each herb was individually tested for hair growth activity within a 1-10% concentration range. A mixture of these herbs was then prepared in varying concentrations and tested using three different oil preparation techniques. The oils were analyzed for moisture content, total ash, acid insoluble ash, water soluble ash, water insoluble ash, and sulphated ash. Additionally, chromatographic and chemical tests were conducted to identify active constituents. Due to formulation viscosity considerations, the maximum combined drug concentration was found to be 30%. The formulation containing 7.5% of each herb showed excellent hair growth activity, comparable to a 2% minoxidil ethanolic solution, by enlarging follicular size and prolonging the anagen phase. This suggests a promising herbal alternative to minoxidil. Superior hair growth results were observed in formulations prepared using the boiling method for oil preparation.

**KEYWORDS:** Herbal preparation, Hair oil, Hibiscus, Amla, Methi, Brahmi

## INTRODUCTION

In androgenic alopecia, it is believed that genetically susceptible hair follicles are subject to miniaturization stimulated by androgens. This leads to the gradual replacement of thick, pigmented terminal hairs with barely visible, depigmented vellus hairs in affected areas. This process, mediated by dihydrotestosterone, involves the continuous miniaturization of androgen-sensitive hair follicles, often accompanied by perifollicular fibrosis observed in histological examinations. Hair plays an important part in mortal life. In India the traditional process is the medication of hair canvases put together with colorful hair growth promoting medicines. Indian women are known for their long, candescent and healthy hair, so it isn't surprising that

hair care features prominently in their tone-care rituals. The Charaka Samhitha (the definitive book on Ayurvedic drug) describes the significance of slicking the hair and crown to maintain good hair health and help hair loss. The diurnal hair oiling was recommended with applicable sauces filled to suit others ingredients and this practice also nonstop until moment. The hair oil painting medications are Included to treat colorful dandruff, hair fall process, split ends etc. The hair oil painting medications are substantially used to cool the crown for luxurious growth of hair in both men and women. Colorful types of canvases like coconut oil painting, almond oil painting, castor oil painting, onion oil painting are applied to crown in amalgamation with suitable herbal medicines. Among these canvases coconut oil painting is the foremost good oil painting base because it get absorbed into the hair beaches better than other canvases and also provident compared to other canvases . Hence coconut oil painting added with herbal medicines is mentioned system for stylish hair growth.

Hair is an epidermal outgrowth which is one of the vital corridor adding the overall fineness of the body. Hair fall, dandruff, lice, spilt ends, slate hair are many problems involved with hair faced by mortal. To overcome these, mortal takes numerous measures by applying numerous cosmetics for each. Hair oil painting is one among them used to break nearly all of these problems. Herbal cosmetics are in high demand due to the adding interest of humanity towards them because they're more effective with o or lower side goods, fluently available constituents etc. Hair care cosmetics are now added with sauces and they're well honored compared with synthetic bones

Herbal hair oil painting is more favored and is used in numerous affections of hair. They promote hair growth, ameliorate fineness of hair and help hair fall<sup>5</sup>. Hair oil painting not only promotes hair growth they also give necessary humidity to the crown rendering in beautiful hair.

#### ➤ TYPES OF HAIRFALL :

- Androgenetic Alopecia. Androgenetic alopecia is the most common type of hair loss, affecting more than 50 million men and 30 million women in the United States. ...
- Telogen Effluvium. ...
- Anagen Effluvium. ...
- Alopecia Areata. ...
- Tinea Capitis. ...
- Cicatricial Alopecia. ...
- Hair Shaft Abnormalities. ...
- Hypotrichosis.

#### ➤ TYPES OF HAIR OIL

1. Castor Oil : Known for its moisturizing properties and potential to promote hair growth.
2. Coconut Oil : Often used to condition and strengthen hair, potentially reducing breakage and promoting growth.

3. Argan Oil : Rich in vitamins and antioxidants, it's believed to nourish the scalp and hair follicles, supporting healthy growth.
4. Jojoba Oil : Mimics the natural oils produced by the scalp, aiding in moisture retention and potentially promoting hair growth.
5. Rosemary Oil : Thought to stimulate hair follicles and improve circulation to the scalp, which may promote growth.
6. Peppermint Oil : Can provide a tingling sensation and may improve blood flow to the scalp, potentially aiding in hair growth.
7. Almond Oil : Rich in vitamins and minerals, it's often used to nourish the scalp and strengthen hair, possibly promoting growth.
8. Tea Tree Oil : Known for its antimicrobial properties, it can help maintain a healthy scalp environment, which may support hair growth.

### ➤ CAUSE OF HAIRFALL

1. Hair loss patterns are significantly influenced by family history and genetics.
2. Hair loss can result from hormonal changes, which occur during events like pregnancy, childbirth, menopause, or thyroid disorders.
3. Stress: Emotional or physical stress can disrupt the hair growth cycle, leading to excessive shedding.
4. Nutritional Deficiencies: Inadequate intake of essential nutrients like iron, protein, vitamins (especially B vitamins), and minerals can contribute to hair loss.
5. Medical Conditions: Conditions like alopecia areata, autoimmune diseases, scalp infections, and certain medical treatments (e.g., chemotherapy) can cause hair loss.
6. Medications: Some medications, including those used for cancer, arthritis, depression, heart problems, and high blood pressure, may lead to hair shedding as a side effect.
7. Hair Styling Habits: Excessive heat styling, tight hairstyles (like ponytails or braids), and harsh chemical treatments can damage the hair and lead to breakage.
8. Age: As people age, hair growth slows down, and hair follicles may become thinner, leading to gradual hair loss.
9. Environmental Factors: Exposure to pollutants, UV radiation, and harsh climates can weaken the hair and contribute to hair fall.
10. Poor Scalp Health: Conditions like dandruff, scalp psoriasis, and fungal infections can affect hair health and lead to hair loss.

### ➤ **ADVANTAGES OF HAIR GROWTH OIL**

1. **Moisturization:** Hair oils help to moisturize the scalp and hair strands, preventing dryness and reducing the risk of split ends and breakage.
2. **Strengthening:** Certain oils, like coconut oil and castor oil, contain fatty acids that can penetrate the hair shaft, strengthening it from within and reducing damage.
3. **Promotes Hair Growth:** Some oils, such as castor oil and rosemary oil, are believed to stimulate hair follicles and promote healthy hair growth.
4. **Improves Scalp Health:** Massaging oil into the scalp can improve blood circulation and nourish the hair follicles, leading to a healthier scalp and potentially reducing dandruff and itching.
5. **Adds Shine and Luster:** Hair oils can coat the hair shaft, smoothing down the cuticles and adding shine and luster to dull hair.
6. **Protects Against Damage:** Oils can act as a barrier, protecting the hair from environmental damage, heat styling, and harsh chemicals found in some hair products.
7. **Reduces Frizz:** By providing moisture and sealing the hair cuticle, oils can help reduce frizz and flyaway, leaving your hair looking smoother and more manageable.

### ➤ **DISADVANTAGES OF HAIRGROWTH OIL**

1. **Greasiness:** Overuse or applying too much oil can leave the hair looking greasy and weighed down, especially for those with fine or thin hair.
2. **Buildup:** Using too much oil or not properly washing it out can lead to buildup on the scalp and hair, which can make the hair look dull and dirty.
3. **Allergic Reactions:** Some people may be allergic to certain oils or ingredients in hair oils, leading to scalp irritation, redness, or itching.
4. **Clogged Pores:** Using heavy oils on the scalp may clog the hair follicles and pores, potentially leading to acne or folliculitis (inflammation of the hair follicles).
5. **Staining:** Certain oils, like castor oil or darker oils, may stain clothing or pillowcases if not properly absorbed into the hair.
6. **Increased Breakage:** While oils can help moisturize and strengthen the hair, using too much or not properly rinsing it out can actually lead to increased breakage and damage.
7. **Interference with Styling:** Excessive oil on the hair can interfere with styling, making it difficult for hair to hold curls or maintain volume.

**HERBAL COMPONENT PROFILE****Coconut oil**

Family- Aceraceae.

Scientific name- *Cocos nucifera* L.

Parts used- kernel oil.

Geographical location: Southern India.

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

User- This item serves as a means of transportation, while also encouraging hair growth and providing moisture to the hair follicles.

**Fenugreek:**

Family- Fabaceae.

Scientific name- *Trigonella foenum-graecum*.

Parts used- Seeds.

Geographical location: Maharashtra.

Active constituents- Trimethylamine, Trigonelline, Quercetin.

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

**Curry leaves:**

Family- Rutaceae.

Scientific name- *Murraya koenigii*.

Parts used- Leaves.

The sentence could be rewritten as: "Subtropical and tropical regions span across Asia."

Active constituents- Bismahanine, murrayanine, murrayazolinol.



### **Emblica officinalis ( Euphorbiaceae )**

The fruits of Emblica officinalis are abundant in vitamin C, tannins, and minerals like phosphorus, iron, and calcium. These nutrients nourish the hair and also contribute to darkening its color.

Part Used: Fruit.

Chemical constituents: Alkaloids (Phyllantidine, Phyllantine), Vitamin C, Gallotannis (5%), Carbohydrates (14%), Pectin, Minerals, Phenolic acid, Gallic acid, Ellagic acid, Phyllemblic acid, Emblicol, Amino acid ( Alanine, Aspartic acid, Glutamic acid, Lysine, Proline)<sup>9</sup> . Gupta et al explored the heightened hair growth potential of Emblica officinalis.



### **Hibiscus:**

Common Name: Hibiscus

Botanical Name: *Hibiscus sabdariffa L*

The genus, belonging to the mallow family, Malvaceae, encompasses numerous flowering plants native to warm temperate, subtropical, and tropical regions worldwide. Recognized for their strikingly large flowers, member species are often referred to as “hibiscus” or, less commonly, as rose mallow.



**MATERIALS:**

INGREDIENT	QUANTITY
Castor oil	15ml
Coconut oil	15 ml
Fenugreek Seeds	4gm
Onion	1 piece
Curry Leaves	8-10 leaves
Hisbicus Flower	4-5

**EQUIPMENT :**

Sr. No	Equipment's
1	Digital balance
2	Magnetic Stirrer

**METHOD OF PREPARATION****Collection and authentication of plant**

The dried ripe fruits of *Embllica officinalis*, the entire herb of *Bacopa monniera*, and the rhizomes of *Cyperus rotundus* were acquired from both the Institute Herbal garden and the local market. Specimen sample was authenticated from NBRI, Lucknow vide Specimen No NBRI SOP 202 dated 23.07.2010. The plant drug's desired components are purified to eliminate undesired foreign matter, then air-dried in the shade, crushed using a mechanical device, and sieved through a number 80 mesh. Subsequently, the powdered drugs undergo pharmacognostic screening to verify and characterize the phyto-constituents present in the sample.

## Procedure

After verifying the authenticity of the drug and consulting the literature, confirm it. Herbal oil was prepared in a fix proportion containing all the three drugs (*Emblca officinalis*, *Bacopa monari*, *Cyprus rotundas*). The hair oil, comprising a mixture of all three herbs, was formulated with varying concentrations using coconut oil as a base. Various methods, including direct boiling, paste, and cloth pouch methods, were employed for preparation. The formulations, labeled HF1 (5%), HF2 (7.5%), and HF3 (10%), as detailed in Table 1, were then evaluated for their physical, chemical, and hair growth properties.

Table 1: Choose the percentage of herbal extract concentration for formulating hair growth oil.

FORMILATION	EMBLICA PFFCINALIS
HF1	5%
HF2	7.5%
HF3	10%

## Physical & Chemical Evaluation of Prepared Formulation

The physically and chemically evaluated formulated herbal oil was assessed for its general characterization, adhering to Ayurvedic pharmacopeia standards, which encompass pH, Acid value, and Refractive index, Specific gravity, Colour & Odour as mentioned in Table 2, 3.

Table: 2 Assessment of the typical traits of the prepared formulation.

Parameter	HF1	HF2	HF3
Color	Greenish brown	Greenish brown	Greenish brown
Odour	Characteristic	Characteristic	Characteristic

Table: 3 Assessment of the physical characteristics of the prepared formulation.

PHYSICAL PARAMETER	CONCENTRATION		
	5%	7.5%	10%
PH	9.2	8.9	7.8
Acid value	2.76	2.19	1.42
Specific gravity	9.454	9.621	9.769
Acid value	1.498	1.426	1.361

## RESULT :

### 1.Organoleptic properties:

Formulation s	Color	Sensitivity	Grittiness	Sedimentation
F4	Dark greenish brown	No Irritation	Smooth	No Sedimentation



## 2. pH Determination

Formulation	pH value
F4	5.9

## 3. Viscosity Determination

Formulation	Viscosity(centipoise)
F4	0.92

## 4. Acid Value

Formulation	Acid Value
F4	5.2

## 4. Specific Gravity

Formulation	Specific gravity
F4	1.09

## 5. Stability Test

The stability of the five formulations remains consistent over a shelf life of three months..

Sr.No	Color	Sensitivity	Grittiness	Sedimentation	pH value	Viscosity	Acid Value	Specific gravity
F1	Dark greenish brown	No irritation	Smooth	No	6.2	0.94	5.2	1.01
F2	Dark greenish brown	No irritation	Smooth	No	6.0	0.94	5.1	1.02
F3	Dark greenish brown	No irritation	Smooth	No	6.1	0.93	5.2	1.02
F4	Dark greenish brown	No irritation	Smooth	No	5.9	0.92	5.2	1.09
F5	Dark greenish brown	No irritation	Smooth	No	6.2	0.93	5.1	1.06

**SUMMARY :**

The interest in and use of herbal remedies has grown significantly in recent years, even in places where access to contemporary drugs is available. Medicinal plants are the richest source of bioactive molecules utilized in both traditional and modern medicine, which has led to a current surge in interest in plant-derived substances and herbal medicines due to their diverse applications. The current study focuses on the creation and assessment of a Herbal hair oil is more preferred and is used in many ailments of hair. They promote hair growth, improve elegance of hair and prevent hair fall. It not only promotes hair growth they also provide necessary moisture to the scalp rendering in beautiful hair.

Herbal hair oils are natural oil products with essential properties to treat hair problems like thinning of hair and dry or flaky scalp. These oils are used not only for moisturizing purposes but also to promote hair growth, improve circulation of blood in the scalp, prevent dandruff and add volume to the hair shaft.

**CONCLUSIONS :**

The utilization of herbal hair oil in the cosmetics enhanced many folds in personal hygiene and health care system. Herbal oil is one of the most well-recognized hair treatments. The use of different herbal materials which is having different benefits with good combination will give the great effect for hair. The herbal extracts and constituents chosen for the formulation of hair oil were reported to have hair growth, relaxation, anti-dandruff, hair thickening, and hairfall control properties, which when used together elicited a synergistic effect in promoting healthy and shiny hair growth. The formulation was proven to be safe for human use. Because values of evaluation parameters of our formulation show similar

Results as standard values hence it is concluded that the oil is beneficial in maintaining good hair growth of the hair, protection from dandruff and results lustrous looking hairs. 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. It provides various essential nutrients required to maintain normal function of sebaceous glands and promotes natural hair growth. Formulation was done and evaluated by means of various parameters like pH, organoleptic properties (colour, odour, sensitivity, sedimentation) acid value, viscosity, specific gravity, and stability test. At last, it can be concluded that the herbal hair oil formulations have significant quality.

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