



Formulation and Evaluation of Herbal Hair Oil

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Abstract :

When compared to synthetic formulations, herbal ones always have less or no negative effects. The current study's goal is to prepare herbal hair oil. Alma, Hibiscus, Bhringraj, Jatamansi, raw garlic, muskmelon seeds, moringa, curry leaves, guava leaves, papaya leaves, methi, mimosa pudica, and spring onions are examples of herbal substances that are used. The boiling process was used to create a blend of crude medications in the form of herbal hair oil based on the aforementioned data. Five different herbal drug formulations were used, and all of them demonstrated anti-hairfall properties along with a few other positive effects, such as improved blood circulation to the scalp and roots, reduced hair pigmentation, anti-fungal activity, and lessened hair whitening.

The prepared herbal oil was assessed using a number of parameters, including specific gravity, stability, viscosity, acid value, pH, and organoleptic properties. The results showed that the oil had satisfactory organoleptic properties, no sedimentation, and no grittiness, which are all comparable to the standard values.

Keywords: Hair oil, coconut oil, curry leaves, amla, hibiscus leaves and flowers, Fenugreek seeds.

Introduction :

Hair is a vital component of human existence (1). Hair care products are formulas that are used to cleanse, change the texture and colour of hair, revitalise stressed hair, nourish hair, and give hair a healthy appearance. The hair care products known as hair oils are used to address hair conditions like baldness, hair aggressiveness, discolouration, hair loss, and dryness. Oiling the scalp and hair is essential for maintaining good hair and preventing hair loss, according to the Charaka Samhitha, the authoritative literature on Ayurvedic medicine. Oiling your hair daily with herbs that work well with other components was recommended, and this practice has continued to this day (2).



Fig.no. 1 : various Herbal Ingredients

The herbal hair oil formulation is of high quality and offers a variety of vital nutrients that are used to support natural hair development and preserve the sebaceous glands' regular activities. In India, the conventional approach is creating hair oils and combining them with other drugs that promote hair growth. Hair upkeep is a major component of self-care rituals, which is not surprising considering that Indian women are known for having long, glossy, and healthy hair.

Herbal hair oil treats dry scalp and hair issues in addition to moisturising the scalp. It promotes healthy hair development and provides vital nutrients required for the sebaceous glands to operate normally. Flavonoids, polyphenols, saponins, tannins, vitamins, proteins, minerals, ricinolein acid, and other healthy substances are abundant in the plant extracts that go into making the oil. These components support hair health in several ways and encourage hair growth (9).

Herbal hair oil enhances the texture and strength of hair. It helps get rid of dandruff by providing the scalp with enough moisture. Frequent application helps to heal damaged hair by increasing blood circulation in the scalp. Additionally, it reduces hair drying, oedema, and hygral exhaustion. Additionally, the oil improves scalp health by bridging the spaces between cuticle cells, shielding hair follicles from surfactants. Using the oil to massage the scalp encourages exfoliation, which might lessen hair loss (10).

Onion, coconut, almond, castor, and other types of oils are combined with the proper herbal remedies and applied topically to the scalp. Coconut oil is the most deserving oil foundation of all because it is more economical and absorbs into hair strands more efficiently than other oils. Coconut oil combined with natural drugs is the suggested approach for the best hair development (3).

Hair :

Hair is a protein filament that grows from follicles found in the dermis. It plays important roles in protection, sensory input, thermoregulation, and communication. The structure of hair consists of three main parts: the cuticle (outer layer), cortex (middle layer), and medulla (inner core, present in some hairs).

Type of Hair (5,6) :

1. Straight Hair (Type 1):

Smooth and shiny due to oil easily traveling down the shaft.

Difficult to curl and prone to becoming oily.

2. Wavy Hair (Type 2):

Has a loose “S” shape.

More prone to frizz than straight hair.

3. Curly Hair (Type 3):

Has a defined curl pattern.

Often dry and prone to tangles.

4. Coily/Kinky Hair (Type 4):

Very tight curls or zig-zag pattern.

Most fragile and prone to breakage.

HAIR GROWTH CYCLE (4):

Hair growth cycle consists of 3 stages: -

1. Anagen stage (Growth)
2. Catagen stage (Transition)
3. Telogen stage (Rest)

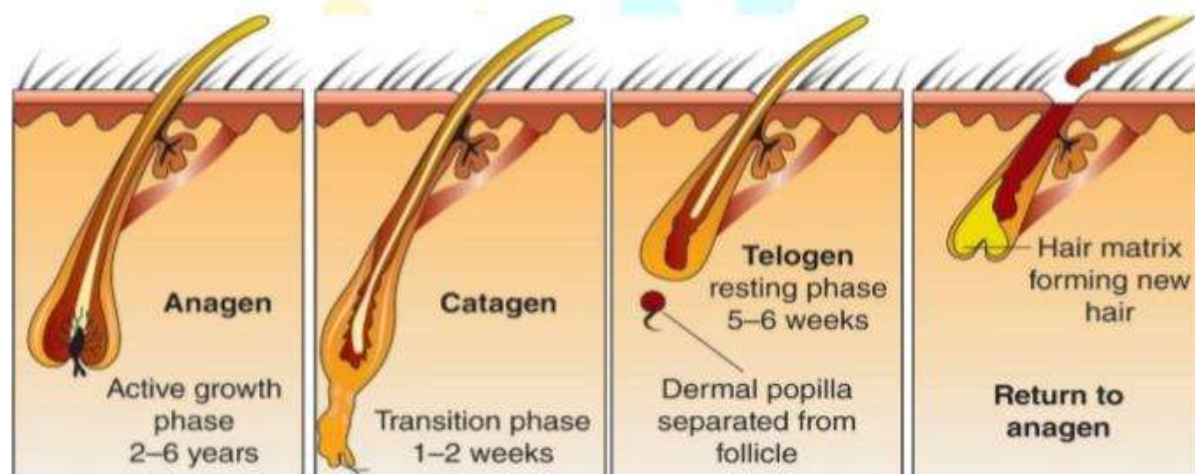


Fig.no. 2 : Hair Growth Cycle

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.

Hair Oil :

Hair oil is a cosmetic preparation made from natural or synthetic oils applied to the hair and scalp. Its primary purposes include moisturizing the scalp, strengthening hair strands, reducing hair fall, promoting hair growth, and improving hair texture and shine.

Hair oils can be carrier oils (like coconut, almond, or castor oil) or medicated/herbal oils infused with plant extracts (such as amla, bhringraj, hibiscus, neem, etc.). (7)

Different types of herbal hair oil available in market.

- i. Amla hair oil
- ii. Coconut hair oil
- iii. Bhringraj hair oil
- iv. Jasmine hair oil



Fig.no.3 : Hair Oil

Function of Hair Oil:

- 1. Nourishes the scalp and hair roots.
- 2. Improves blood circulation in the scalp during massage.
- 3. Reduces dryness, dandruff, and other scalp conditions.
- 4. Strengthens hair shafts, preventing breakage and split ends.
- 5. Promotes hair growth with regular use.

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.

Aim and Objective :**Aim :**

To formulate and evaluate a herbal hair oil using natural ingredients known for promoting hair growth, reducing hair fall, and improving overall scalp health .(12)

Objective :

The primary objectives of hair oil are:

1. To nourish the scalp and hair roots by supplying essential nutrients.
2. To promote hair growth and reduce hair fall by stimulating blood circulation in the scalp.
3. To improve hair texture, making it softer, shinier, and more manageable.
4. To protect hair from damage caused by environmental factors, heat, and styling products.
5. To prevent and treat scalp conditions such as dandruff, dryness, and itchiness.
6. To reduce hair breakage and split ends by strengthening hair strands.(8,11)

Ingredients :**1. Coconut Oil :**

Family- Aceraceae.

Scientific name- Cocos nucifera L.

Other names: Fossil oil.

Grease

Lubricating oil.

Parts used- kernel oil.

Geographical location: Southern India.

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

Uses- Used as vehicle, promotes hair growth and Moistures the hair follicles.

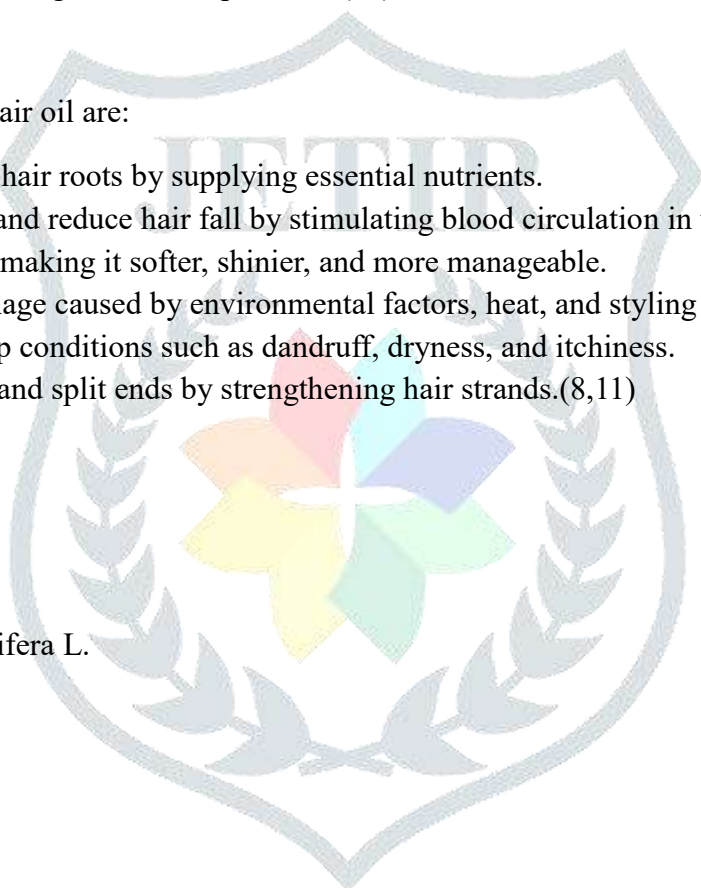




Fig.no. 4 : Coconut Oil

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.

Uses:

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



fig.no.5 : Curry Leaves

2. Fenugreek :

Family- Fabaceae

Scientific name- *Trigonella foenum-graecum*.

Parts used- Seeds.

Geographical location: Maharashtra.

Active constituents- Trimethylamine, Trigonelline, Quercetin.

Other names: Herbaceous plant.

Fenugreek seed.

Trigonella.

Uses- Reduce dandruff,

Promotes hair growth and shows anti-fungal activity



Fig.no.6 : Fenugreek seeds

4.Amla :

Family-Euphorbiaceae

Biological name: Phyllanthus Emblica

Parts used: Fruit powder

Other names: Indian gooseberry, Bhumi amla, Bhumyamalki,

Active constituents- Vitamin C, Tannins, Phenols.

Uses :

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



fig.no.7 : Amla Powder

5.Hibiscus Flower & Leaves :

Family: Malvaceae

Botanical name: Hibiscus rosa-sinensis

Other names: Hibiscus arnottii Griff.

Hibiscus boryanus DC.

Hibiscus cooperi auct.

Active constituents- flavonoids, tannins

Parts used: Whole flower & leaves.

Uses:

- i. Hibiscus flowers are used to clout
- ii. Premature greying of hairs.
- iii. prevent hair loss and spilt ends.



Fig.no. 8 : Hibiscus Flower & Leaves

Formulation Table :

Sr.no.	Ingredients	Quantity Taken
1	Coconut Oil	100 ml
2	Curry Leaves	8 unit
3	Fenugreek seeds	2 gm
4	Amla fruit Powder	2 gm
5	Hibiscus Flower	3-4 unit
6	Hibiscus Leaves	3-4 unit

Table No. 1 : Formulation Table



fig.no. 9 : Herbal Oil Formulation

Methods :

Method of preparation :

1.Preparation of Herbal Ingredients:

- i. Wash curry leaves, hibiscus flowers, and hibiscus leaves thoroughly and pat dry.
- ii. Lightly roast the fenugreek seeds until aromatic.
- iii. If using dried herbs, make sure they are clean and free from moisture.

2.Infusion in Coconut Oil:

- i. Pour coconut oil into a clean, dry stainless steel or heavy-bottomed pan.
- ii. Add all the herbal ingredients (curry leaves, roasted fenugreek seeds, amla powder, hibiscus flowers and leaves) to the oil.

3.Heating:

- i. Heat the mixture on a low flame for about 15–20 minutes.
- ii. Stir occasionally to prevent the herbs from sticking or burning.
- iii. Heat until the herbs become crisp and the oil emits a pleasant aroma.

4.Cooling and Filtration:

- i. Turn off the heat and allow the oil to cool to room temperature.
- ii. Filter the oil using a fine muslin cloth or strainer to remove all solid particles.

5. Storage:

- i. Pour the filtered oil into a clean, dry glass bottle or airtight container.
- ii. Store in a cool, dark place.

Evaluation Study of Herbal Hair Oil :

To ensure the quality, stability, and effectiveness of herbal hair oil, the following parameters are commonly evaluated:

1. Physicochemical Evaluation:

- pH: Using a digital pH meter (ideal range: 5.5 to 6.5 for scalp compatibility).
- Viscosity: Measured using a Brookfield viscometer.
- Specific Gravity: Measured using a pycnometer.
- Acid Value: Determines the rancidity or degradation of the oil.
- Saponification Value: Indicates the amount of potassium hydroxide required to saponify the fat.

Sr.no.	Parameters	Observation
1.	Colour	Brown
2.	Odour	Characteristic
3.	Texture	Smooth
4.	PH	6.1
5.	Specific Gravity	0.88g/cm ³
6.	Smoothness	Smooth
7.	Acid Value	1.8
8.	Saponification Value	198 mg
9.	Viscosity	1.06

Table No. 2 : Physicochemical Evaluation

2. Stability Studies:

Store the oil under different conditions (room temperature, refrigeration, and high humidity).

Observe for changes in color, odor, and separation of contents over a period (15 days, 1 month, 3 months).

3. Biological Evaluation :

- Hair growth activity: Apply on shaved skin of albino rats and observe regrowth.
- Anti-dandruff activity: Test on dandruff-prone scalp or in vitro fungal cultures (e.g., Malassezia species)

Sr.no.	Parameters	Observation
1	Irritation Test	Non irritant
2	Sensitivity Test	Non sensitive

Table No. 3 : Biological Evaluation

Result :

The formulated herbal hair oil containing coconut oil, curry leaves, fenugreek seeds, amla powder, and hibiscus flowers and leaves was evaluated based on organoleptic, physicochemical, and stability parameters. The results are summarized below:

1. Organoleptic Properties:

Parameters	Observation
Colour	Greenish -brown
Odour	Pleasant herbal smell
Consistency	Smooth
Appearance	Clear, no phase separation

2. Physicochemical Parameters :

Test	Result	Standard Values
PH	6.1	5.5 – 6.5
Viscosity	1.06	-
Acid Value	1.8 mg	2.0
Saponification Value	198 mg	190 - 205

Specific Gravity	0.88	0.90 – 0.93
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3.Stability Study (30 Days):

- No change in color, odor, or consistency.
- No microbial growth observed.
- Oil remained stable under room temperature and refrigerated conditions.

Conclusion :

The formulated herbal hair oil using coconut oil, curry leaves, fenugreek seeds, amla powder, and hibiscus flowers and leaves was found to be effective in improving hair health. The evaluation studies demonstrated that the oil possessed desirable physicochemical properties, was organoleptically acceptable, and showed stability over time. Its natural ingredients are rich in nutrients that promote hair growth, reduce hair fall, and help in nourishing the scalp without causing irritation or side effects.

Hence, the herbal hair oil can be considered a safe, cost-effective, and beneficial alternative to synthetic hair care products for maintaining healthy hair and scalp.

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