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## Formulation and evaluation of herbal hair oil

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### Abstract

Herbal formulations always have lesser or no side effects comparatively with synthetic. The aim of present study involves preparation of herbal hair oil using the herbal ingredients like, Amla, Hibiscus, Bhringaraj, Watermelon seed, Moringa, Curry leaves, Guava leaves, Papaya leaves, Methi, Mimosa Pudica and Spring onion. Based on the above observations, mixture of crude drugs was prepared in the form of herbal hair oil by boiling method. We have used two formulas using different herbal drugs and all the formulation are showing anti-hair fall property with some of other beneficial activities like anti-dandruff activity, improves blood circulation to the scalp and roots, reduce hair pigmentation, anti-fungal activity, reducing the whitening of the hair. 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:** Hair oil, herbs, formulation, preparation, evaluation, results and discussion.

### Introduction

Hair plays an important role in human life. In India the traditional process is the preparation of hair oils put together with various hair growth promoting drugs. Indian women are known for their long, shiny and healthy hair, so it is not surprising that hair care features prominently in their self-care rituals. The Charaka Samhitha (the definitive book on Ayurvedic medicine) describes the importance of oiling the hair and scalp to maintain good hair health and prevent hair loss. The daily hair oiling was recommended with appropriate herbs filled to suit others constituents and this practice also continuous until today. The hair oil preparations are included to treat various dandruff, hair fall process, split ends etc. The hair oil preparations are mainly used to cool the scalp for luxurious growth of hair in both men and women. Various types of oils like coconut oil, almond oil, castor oil, onion oil are applied to scalp in admixture with suitable herbal drugs. Among these oils coconut oil is the foremost worthy oil base because it get absorbed into the hair strands better than other oils and also economical compared to other oils. Hence coconut oil added with herbal drugs is mentioned method for best hair growth. Hair on our head is the first line defense against the sun's UV rays. Hair care product are nothing but it is those formulations which are used for modifying the texture of hair. Herbal cosmetic are highly used due to their less adverse effects and the ingredients used are easily available.

Now a days hair care cosmetic are added with herbs and they are well recognized compared with synthetic ones. These years, a part of the hair care routine the use of hair oils has been increasing and it is due to their benefits in addressing the hair concerns. Hair oils are formulated with both synthetic and natural ingredients. Synthetic hair oils are those hair care products which are made by chemical or artificial substances. They are used to provide shine and excellent conditioning and they also helps to reduce frizz.



**Fig 1:** Ingredients

Natural hair oils are the hair care products which are rich in Vitamins, Minerals and Fatty acids which are the vital elements in the human cells and these elements are also present in the skin and hair of our body. Hence, while we are applying the natural hair oils, we are allowing these vital nutrients to absorb well into the scalp and hair thus it helps for a healthy regeneration of the scalp and a strong and healthy hair growth.

Apart from hydrating your scalp and stimulating hair growth, hair oiling also strengthens the hair. And it also provides important minerals and nutrients for the scalp. This will prevent external damage and strengthens the hair as well. The primary purpose of oiling is a prerequisite to condition the scalp. An oil massage also increases the hair growth by stimulating the hair follicles and improving blood circulation to the scalp.



**Fig 2:** Prepared hair oils

Herbal formulation is completely made up of natural sources derived from the plants. It is applied to the hair as a cosmetic, conditioner, styling aid, restorative and also as a tonic. There are different types of hair oils and all these are used for different purposes such as hair growth, health, dryness, scalp, fix damaging hair also used for dandruff, split ends and greying of hair etc. Herbal hair oil not only moisturize scalp but also reverses dry scalp & dry hair

condition. It provides numerous essential nutrients required to maintain normal function of Sebaceous Gland & promote normal hair growth.

### Methodology

#### Materials used

All the materials used were of pharmaceutical or analytical grade. (LR/AR)

**Table 1:** List of Herbs Used.

Sl. No.	Name of the Herbs	Uses
1	Moringa Leaves	Fights oxidative stress
2	Fenugreek	Provides Smoothness
3	Papaya leaves	Prevent thinning of hair
4	Marigold flower	Increases collagen production in the hair
5	Rose petals	Anti- oxidants
6	Bhringaraj oil	Prevents baldness
7	Guava leaves	Prevents hair damage
8	Amla	Hair conditioner
9	Neem leaves	Anti- microbial activity
10	Curry leaves	Moisturizes the scalp
11	Mimosa Pudica	Control hair loss
12	Hibiscus	Thickening of hair
13	Spring onion	Treats scalp infection
14	Coconut oil	Moisturizer, stimulates hair growth unclogging pores
15	Till oil	Promotes hair growth and antigreying activity
16	Almond oil	Rich in Vitamin E and strengthen the hair
17	Castor oil	Antimicrobial, antiviral and promotes hair growth
18	Jasmine oil	Fragrance
19	Lavender oil	Fragrance

### Procedure

✓ The herbs used in the present study for making herbal hair oil were dried, crushed, and passed in sieves and it was used in coconut oil base. The hair oil was prepared by utilizing five different formulas.

✓ First is direct boiling method in which crude drugs were powdered and directly boiled in Coconut oil, Till oil, Almond oil, Castor oil with continuous stirring and heated until the drug completely gets extracted into the oil base.

### Formulation 1

**Table 2:** Ingredients of formulation 1

Ingredients	Quantity (%)
Coconut oil	60%
Till oil	15%
Amla	3%
Almond oil	4%
Neem	2%
Castor oil	3%
Curry leaves	2%
Spring onion	4%
Hibiscus	2%
Jasmine	1%
Mimosa Pudica	4%

- Accurately weigh all the dried and fresh herbs and leaves.
- Mix required quantities of Coconut oil, Castor oil, Till oil and Almond oil as mentioned in the above table no: 2
- After that mixing add Spring Onion, dried Amla and Mimosa Pudica.
- Then add curry leaves, hibiscus, dried neem and boil up to 35 minutes under low flame.
- After that the whole preparation was filtered using muslin cloth.
- Add Jasmine oil for Fragrance

### Formulation 2

**Table 3:** Ingredients of formulation 2

Ingredients	Quantity (%)
Coconut oil	60%
Till oil	15%
Methi leaves	1%
Almond oil	4%
Castor oil	3%
Rose petals	1%
Moringa leaves	4%
Marigold flower	1%
Lavender oil	1%
Papaya leaves	4%
Bhringraj oil	2%
Guava leaves	4%

- Collect and weigh all herbal products such as Moringa leaves, Papaya leaves, Guava leaves, Methi, Rose petals, Marigold flower.
- Add Coconut oil, till oil, Almond oil and Castor oil as mentioned above table no: 3.
- Boil herbal products in the above oil formulation up to 35mins.
- Keep aside for overnight.
- Filter the whole preparation by using muslin cloth.
- And collect the final herbal hair oil in the bottle.

### Evaluation parameters:

#### Evaluation test for hair oils

Prepared herbal hair oil was estimated for product performance which includes physicochemical parameters.

#### 1. Organoleptic Property

- **Color:** Detected by naked eyes
- **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 color 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 oil was calculated by using the equation

$$\text{Viscosity of liquid } (\eta_2) = \frac{\eta_1 \times \rho_2 \times t_2}{\rho_1 \times t_1}$$

$\eta_1$  = Viscosity of water

$\rho_2$  = Density of sample

$t_2$  = Mean time of oil from A to B

$\rho_1$  = Density of oil

$t_1$  = Mean time of flow of water from A to B

#### 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 = Number of ml of 0.1M KOH

w = Wt. of oil

#### 5. Specific Gravity

Specific gravity of the prepared oil was determined using specific gravity bottle.

#### 6. Stability Study

It is performed by keeping the prepared herbal hair oil in a closed container at cooled and dry place.

### Results and Discussion

### 1. Organoleptic Property

Formulations	Color	Sensitivity	Grittiness	Sedimentation
F1	Dark greenish brown	No Irritation	Smooth	No Sedimentation
F2	Dark greenish brown	No Irritation	Smooth	No Sedimentation

### 2. pH Determination

Formulation	pH value
F1	6.2
F2	6

### 3. Viscosity Determination

Formulation	Viscosity(centipoise)
F1	0.94
F2	0.93

### 4. Acid Value

Formulation	Acid Value
F1	5.2
F2	5.2

### 5. Specific Gravity

Formulation	Specific gravity
F1	1.01
F2	1.02

### 5. Stability Test

It is observed that the prepared five formulations are stable throughout the shelf life for 3 months

### Conclusion

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 hair fall 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. 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 (color, odor, 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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