



Formulation and Evaluation of Herbal Hair Oil

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ABSTRACT

The hair of humans is very important to our characteristics, and we use a lot of cosmetics to take care of it. So herbal formulations can offer effective solutions for various hair problems with minimal side effects compared to synthetic products. The combination of coconut oil, til oil, almonds oil, curry leaves, fenugreek seeds, moringa leaves, garlic cloves, pumpkin seeds, betel leaves, castor oil, hibiscus, kalonji seeds, amla, shankapushpi, flavouring agents provide a rich source of nutrients that promote healthy hair growth and address common hair concerns like baldness, alopecia, hair fall, grey hair, dryness, and dandruff. The positive evaluation of the formulated oil's organoleptic properties, acid value, saponification value, viscosity, and pH further support its potential as a safe and effective hair care product.

Keywords: Herbal hair oil, Formulation, Evaluation, herbal formulation.

INTRODUCTION

Hair¹ plays a crucial role in our bodies as a protective barrier and a key element of our appearance. It is a complex structure with three main parts:

- Bulb: A swelling at the base located in the dermis.
- Root: The portion of hair below the skin surface.
- Shaft: The visible part of hair protruding above the skin.

A Cross-section of a Hair Follicle



Hair growth happens in three phases:²

- Anagen: The active growth phase.
- Catagen: The transitional phase.
- Telogen: The resting phase, after which the hair sheds.

Hair loss is a common concern for many individuals, and there is a constant search for natural remedies to promote healthy hair growth.

The demand for herbal-based cosmetics has been steadily increasing due to their perceived benefits and natural

properties. Adding herbs to cosmetic products is considered a safer alternative for the skin compared to synthetic ingredients.

Various Herbal Ingredients commonly used in Cosmetics

One type of herbal cosmetic gaining popularity is hair oil. It not only moisturizes the scalp but also helps to revive dry scalp and hair. It also provides essential nutrients vital for maintaining healthy sebaceous glands and promoting natural hair growth.

This main focus is on formulating and evaluating a polyherbal hair oil containing a blend of herbs known for their hair care benefits. These include:

MATERIALS AND METHODS

This polyherbal hair oil is a promising formulation for hair care, given the well-known benefits of the various herbs included. Here are the potential benefits of each ingredient:

Amla: Amla, also known as Indian gooseberry, is a rich source of vitamin C, an antioxidant that helps protect hair from damage and promotes hair growth. It also contains tannins, which can strengthen hair follicles and prevent hair loss.³



Almond oil: Almond oil is a good source of vitamin E, another antioxidant that nourishes hair and prevents dryness and breakage. It also contains fatty acids that help moisturize the scalp and promote healthy hair growth.⁴



Till oil: Till oil, also known as sesame oil, is a traditional hair oil with anti-inflammatory and antibacterial properties. It can help soothe an irritated scalp, reduce dandruff, and promote hair growth.⁵



Fenugreek seeds: Fenugreek seeds are a rich source of protein and vitamins, which can help nourish and strengthen hair. They also contain mucilage, a substance that can help moisturize the hair and scalp.



Moringa leaves: Moringa leaves are a rich source of vitamins, minerals, and antioxidants, which can help nourish and protect hair. They also contain antibacterial and antifungal properties, which can help prevent scalp problems like dandruff.



Pumpkin seeds: Pumpkin seeds are a good source of zinc, magnesium, and iron, which are all essential nutrients for healthy hair growth. They also contain antioxidants that can help protect hair from damage.



Betel leaves: Betel leaves have anti-inflammatory and antibacterial properties, which can help soothe an irritated scalp and prevent scalp infections.



Hibiscus: Hibiscus flowers are a rich source of vitamins and antioxidants, which can help nourish and protect hair. They also contain anthocyanins, which may help prevent premature greying.



Kalonji seeds: Kalonji seeds, also known as black cumin seeds, have anti-inflammatory and antifungal properties, which can help soothe an irritated scalp and prevent scalp infections. They may also help promote hair growth.



Shankapuspi: Shankapuspi is an herb with anti-inflammatory and anti-stress properties. It may help reduce scalp inflammation and prevent hair loss associated with stress.⁶



Garlic: Garlic has anti-inflammatory and antibacterial properties, which can help soothe an irritated scalp and prevent scalp infections. It may also help promote hair growth.



Castor oil: Castor oil is a thick, viscous oil with anti-inflammatory and antibacterial properties. It can help moisturize the scalp and promote hair growth.⁷



Curry leaves: Curry leaves have anti-inflammatory and antioxidant properties, which can help soothe an irritated scalp and protect hair from damage. They may also help promote hair growth.



Coconut oil: Coconut oil is a popular hair oil that is known for its moisturizing properties. It can help penetrate the hair shaft and provide deep conditioning.



Flavouring agent: The addition of a flavouring agent can help make the hair oil more pleasant to use⁸.

So overall this polyherbal hair oil has the potential to provide a range of benefits for hair care, including:

- Promoting hair growth
- Preventing hair loss
- Nourishing and strengthening hair
- Moisturizing the scalp and hair
- Soothing an irritated scalp
- Reducing dandruff
- Protecting hair from damage

FORMULATION OF HERBAL HAIR OIL:

Accurately Weigh all of the fresh and dried herbs and leaf powder precisely. Equally combine coconut oil, till oil, almonds oil, curry leaves, fenugreek seeds, moringa leaves, garlic cloves, pumpkin seeds, betel leaves, castor oil, hibiscus, kalonji seeds, amla, shankapushpi Boil until the curry leaves get a deep brown colour. The entire preparation was filtered through muslin fabric following the colour change. Ultimately, a tiny quantity of flavouring was mixed into the oil before it was put into an amber-coloured bottle.⁹

Table 1: Formulation of herbal hair oil

S.NO	INGREDIENTS	Quantity (%)
1	Amla	1%
2	Almond oil	2%
3	Till oil	15%
4	Fenugreek seeds	2%
5	Moringa leaves	4%
6	Pumpkin seeds	2%
7	Betel leaves	3%
8	Hibiscus	1%
9	Kalonji seeds	1%
10	Shankapuspi	1%
11	Garlic	4%
12	Castor oil	2%
13	Curry leaves	1%
14	Coconut oil	60%
15	Flavouring agent	q.s

EVALUATION OF HERBAL HAIR OIL:**Physical Appearance**

The general characteristics like colour and odour were evaluated manually.¹⁰

Acid Value:

10ml of oil was added with 25ml of ethanol and 25ml of ether. Phenolphthalein was added as an indicator and titrated with 0.1M potassium hydroxide solution,¹¹

Acid value = $5.61n/w$ Where,

n= Number of ml of 0.1M KOH

w= Weight of oil

Saponification Value:

In a 250 mL conical flask, 1 mL of oil was accurately weighed, and 10 mL of ethanol: ether combination (2: 1) was added. 25 mL of 0.5 N alcoholic KOH was added to this flask. The flask was kept for 30 minutes and then cooled. Using a phenolphthalein indicator, the cooled solution was titrated against 0.5 N HCl. The blank titration was carried out in the same way but without using any oil (sample). The amount of KOH used in mg was calculated.¹²

Saponification Value: $28.05(b-a)/w$ Where,

w= weight in grams of the solution.

Ascorbic Acid Test:

Added 1 drop of freshly prepared 5 per cent w/v sodium nitroprusside solution and 2 ml of dilute sodium hydroxide solution to 1 ml of 2 per cent w/v solution and 5 ml of water. Drop in 0.6ml of hydrochloric acid, mix, and records found.

Sulphur Test:

On the test paper, a drop of hydrogen peroxide was placed. When exposed to fumes, the paper becomes brown.

Saponin Test:

The formation of stable froth was observed by shaking oil and water in a test tube.

Specific Gravity:

A specific gravity bottle was taken, rinsed with distilled water, dried in the oven for 15 minutes, cooled, and then weighed (a). Herbal hair oil was filled in the same specific gravity bottle, closed, and weighed again (b). Subtracted the weight (b-a) from the weight of the sample per millilitre.

Primary Skin Irritation Test:

A basic skin irritation test was performed on the skin with a small amount of the produced herbal hair oil. For 1 hour, the test site was monitored for erythema and edema.

Table 2: Evaluation of Herbal Hair Oil

S.NO	Parameters	OBSERVATION
1	Colour	Greenish brown
2	Odour	No odour
3	Acid value	1.17
4	Saponification value	19.15
5	Ascorbic acid test	Yellow to blue
6	Sulphur test	Paper changed brown
7	Saponin test	Foam
8	Specific gravity	0.842
9	Primary skin irritation test	No irritation

CONCLUSION

This study on Herbal hair oil is a great alternative to chemical-based hair products, as every ingredient used has numerous benefits and all the parameters indicate that they are within acceptable limits, this oil will aid in promoting healthy hair development, turning grey hair black, preventing dandruff, and producing glossy hair. So, this Herbal Hair oil has minimal or no side effects.

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