



Research Article

Research on Formulation & Evaluation of Herbal Hair Oil

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ARTICLE INFO

Published: 06 May, 2026

Keywords:

Polyherbal formulation, Alopecia, Hair oil, Herbal cosmetics, Hair growth

DOI:

10.5281/zenodo.20044934

ABSTRACT

Hair loss, particularly androgenic alopecia, is a widespread condition affecting individuals' physical appearance and psychological well-being. The present study focuses on the development and evaluation of a polyherbal hair oil formulated using natural plant-based ingredients. The formulation includes medicinal plants such as Amla, Aloe vera, Garlic, Hibiscus, Fenugreek, Neem, and Curry leaves incorporated in a suitable oil base. The prepared formulation was evaluated for physicochemical parameters including pH, viscosity, specific gravity, acid value, and stability. The study concludes that polyherbal hair oil can effectively reduce hair fall, improve scalp condition, and promote hair growth.

INTRODUCTION

Hair is an important component of the human body that contributes significantly to appearance and self-confidence. Alopecia is defined as partial or complete loss of hair and can occur due to genetic, hormonal, or environmental factors. Hair growth follows three phases: anagen, catagen, and telogen.

The Main function of hair Follicle is to: -

1) To promote growth of hair

- 2) Help to repair skin after the wound or an injury.
- 3) Forms the new blood vessels.
- 4) Form new neuron cells of nervous system (neurogenesis).

Benefits of Herbal Hair Oil: -

- The hair oil helps prevent hair loss and reduces frizz. The ends of the human hair need special care, and vegetable oil help to pamper throughout the diet.
- Gives shine to hair.
- It helps to relieve stress.

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Relevant conflicts of interest/financial disclosures: The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.



- Regular use of hair oils helps to cure the problem of premature grey hair.

Ideal characteristics of Hair oil: -

- It must impart pleasant smell to the hair.
- It should not have any side effects.
- It must be fluently removed on irrigating with the water.
- It should give luster to the hair.

MATERIALS AND METHODS

1) Measure Ingredients: Weigh all the ingredients in given formula accurately.

2) First of all, the oils (Coconut, Rosemary, Castor, Almond oil, Pumpkin seed oil, Gulmehendi oil) given in formula are mixed together in clean, dry pan

3) Heat the mixture of base oil on low temperature (below 60°C) for about 30 mins

4) Add the herbal powders to the mixture of oil and mix thoroughly to ensure all the powders are evenly dispersed in the oil.

5) The low heat will help to release the active ingredients from the powders without damaging their properties.

6) Heating is continued till the oil is infused and has taken on the color and aroma of the herbs, allow it to cool to room temperature.

7) After oil is cool at room temperature add mixture of juices (Aloe, Ginger, onion, neem, lemon, Spinach, Licorice root, Centella asiatica) in prescribed quantity in formula.

8) Again, heat the oil at low temperature for next 60 minutes again so that all the ingredients in juices form that are concentrated and enhance the medicinal property of oil.

9) After concentrating the juices after heating then switch off the hot plate wait for normalize the temperature of oil to room temperature

10) Strain the oil through a muslin cloth or fine strainer into a clean container.

11) Ensure you squeeze the cloth well to extract as much oil as possible.

12) Add vitamin E oil (1-2 capsules per 200 ml) to act as a natural preservative.

13) Pour the strained oil into a dark, airtight glass bottle to protect it from light and extend its shelf life.

Evaluation Parameters

Organoleptic properties (color, odor)

pH determination

Viscosity measurement

Specific gravity

Acid value

Saponification value

Skin irritation test

Sensitivity test

The prepared polyherbal hair oil was applied on 1 cm skin of hand it is exposed to the sunlight 4 -5 min.

Acid Value

Preparation of 0.1 M solution: 0.56 g of KOH pellets weighed and dissolved in 100 ml of distilled water and stirred it continuously. The prepared 0.1 M KOH solution was filled in burette.

Preparation of sample: Measure 10 ml oil and dissolved in 25 ml of ethanol and 25 ml of ether and shaken well .1 ml of phenolphthalein indicator is added and titrated with 0.1 M KOH solution.



Saponification Value

Weighed accurately 1 ml of oil into 250 ml of conical flask and 10 ml ethanol: ether mixture (2:1) was added. To this flask 25 ml of 0.5 N alcoholic KOH was added. The flask was kept aside for 30 min. The cooled solution was titrated against 0.5 N HCl using phenolphthalein indicator. Similarly, the blank titration was performed without taking oil (sample). Amount of KOH in mg used was calculated.

pH measurement

The pH of prepared polyherbal hair oil was determined using pH meter.

Viscosity

The viscosity of polyherbal hair oil was determined using Ostwald's Viscometer.

RESULTS

• Physical Evaluation: -

Table no.1.Results of physical evaluation

Sr. No	Parameters	Observation
1	Colour	Greenish brown
2	Odour	Characteristics
3	Specific gravity	1.093
4	Viscosity	0.961 poise
5	pH	6.5
6	Acid value	3.5
7	Saponification value	115.05
8	Irritation test	No irritation
9	Refractive index	1.402

Phytochemical test for polyherbal hair oil: -

Table no.2.Results of phytochemical test

Sr. No	Name of the test	Results
1	Alkaloids	-ve
2	Flavonoids	+ve
3	Steroids and terpenoids	+ve
4	Glycosides	+ve
5	Tannins	+ve
6	Saponins	-ve
7	Phenols	+ve

Table.no.3. Formulation of polyherbal hair oil

Sr. No	Ingredients	F1	F2	F3
1	Amla	5	3	4
2	Almond oil	2	2	1
3	Garlic	1	0.5	1
4	Henna powder	2	1	2
5	Neem leaves	2.5	5	3.5
6	Curry leaves	2.5	3.5	3.5
7	Castor oil	20	30	15



8	Coconut oil	25	15	30
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DISCUSSION

The formulation and evaluation of polyherbal hair oil using Neem leaves, curry leaves, tulsi leaves, hibiscus flowers, fenugreek seeds, was prepared. The various parameters like color, odour, irritation test, sensitivity test, viscosity, pH of herbal hair oil evaluated. The formulated herbal hair oils exhibited promising physicochemical properties, antioxidant activity, antimicrobial efficacy, safety, and hair growth promotion in animal models. These findings suggest their potential as natural remedies for hair care. Herbal cosmetics, particularly herbal hair oils, have gained popularity due to their perceived efficacy and minimal adverse effects. This study aimed to formulate and evaluate herbal hair oils for promoting hair growth.

Methodology: Various herbal extracts, including Coconut, Curry leaves, Amla, Garlic, Fenugreek, and Onion, Hibiscus were prepared and incorporated into virgin Coconut oil. Phytochemical screening, total flavonoid content, organoleptic evaluation, chemical analysis (acid value, saponification value, specific gravity), stability studies, antioxidant assay (DPPH), antimicrobial assay, sensitivity studies, and in-vivo hair growth activity were conducted. The formulation of a polyherbal hair oil for the treatment of alopecia has been undertaken in this study, focusing on the utilization of natural herbs known for their hair growth properties. Extensive research was conducted to identify and gather different herbs from natural sources, as they contain various phytochemicals and nutrients that promote hair growth. The process involved herb collection, extraction, phytochemical screening, and formulation evaluation. Essential constituent in herbs which blocks the DHT

(Dihydrotestosterone), 5 alpha reductase and by nourishing the hair providing nutrient they promote hair growth.

CONCLUSION

Polyherbal hair oil is a safe and effective solution for managing hair loss. It provides a natural alternative to synthetic products with minimal side effects. The formulated polyherbal hair oil shows the better hair growth activity with less or no side effects as the essential phytochemicals are present in the herbs that are required for the hair growth activity, and it also treats the different types of alopecia. The present work of formulation has anti-dandruff, moisturizing and anti-microbial activity. The herbs used in the formulation also stimulates hair follicles and therefore helps regrowing hairs.

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HOW TO CITE: Vaibhav Dhengle, Uddhav Awakale, Rutuparna Talekar*, Raju Muley, Sachin Ambhore, Sachin Kale, K. R. Biyani, Research on Formulation & Evaluation of Herbal Hair Oil, *Int. J. of Pharm. Sci.*, 2026, Vol 4, Issue 5, 976-980. <https://doi.org/10.5281/zenodo.20044934>

