



## Formulation and evaluation of polyherbal hair oil

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### Abstract

The concept of beauty and cosmetics is as ancient as mankind and civilization. So, they use various beauty products that have herbs to look charming and young. Now-a-days herbal formulations widely used by the common people because of concept of fewer side effects and with a better safety and security profile. The present work was aimed to formulate herbal oil for general purpose (application in hairs) using various herbs. The formulated hair oil contains different herbal plants which are traditionally utilized for hair growth. This polyherbal hair oil is formulated by using various fresh leaves of Hibiscus Rosa Sinesis, Curry leaves, Amla, Shikakai, Leaves of neem and eucalyptus oil and coconut oil also used. Hair care products used both hair tonic as well as hair grooming aids.

**Keywords:** polyherbal hair oil, hair, hair oil, herbs, evaluation

### Introduction

Hair is one of the vital part of our body & it influences the overall appearances of person. Hair is a protein filament that grows from follicles found in dermis. Hair is one of the most important part of our body that improves overall appearance of person [1]. The hair fall, dandruffs, split ends, gray hairs are the major problems associated with hair. Hair loss is distressing condition for an increasing number of men and women. Hair loss is common patient's problem / complaint. To overcome this problems, we use lots of hair care products [2].

In traditional Indian system of medicine many plants and herbal formulations are reported for hair growth promotion as well as improvement of hair quality. Herbal care products are defined as those formulations which are used for cleansing, modifying the texture of hair, changing of colour, giving life to stressed hair and improving nourishment of the hair [3]. Hair oils are the hair care formulations applied for treatment of hair disorders such as discolouring of hair, hair falling, dryness of hair. Herbal hair oils are formulated with herbal extracts in oil base [4].

Herbal cosmetics were gaining demand in the world market. There is wide range of herbal cosmetic products used as beauty regime to satisfy the purpose of beautification. Herbal hair oils were serving the purpose of hair treatment. Herbal hair oil not only moisturizes scalp but also reserves dry scalp and dry conditions. It promotes natural hair growth [5]. As the realization said that the chemical medicines are not always work as magic bullets and they may have side effects. The current trend move towards the herbalism & use of natural products. Indian herbs are the richest source to be used in cosmetic industries [6]. Herbal hair oil were serving the purpose of hair treatment. There are two categories of hair care products. They are hair tonics & hair grooming aids. Hair oil those contains herbal drugs

are called as hair tonics. These are formulated by herbal extract in an oil base. Hair oils are the hair care formulations applied for treatment of hair disorders [7].

Genetic and hormonal influences largely determine hair thickness and the pattern of distribution. Each hair follicle goes through a growth cycle, which consists of growth stage and resting stage. During the growth stage, cells of matrix differentiate, keratinize & die. This process forms the root sheath & hair shaft. As new cells are added at the base of the hair root, the hair grows longer. In time, the growth of hair stops and the resting stage begins. After the resting stage, a new growth cycle begins. The old hair root falls out or is pushed out of the hair follicles, and new hair begins to grow in its place. Scalp hairs grows for 2 to 6 years and rests for about 3 months. At any time, about 75% of scalp hairs are in the growth stage, visible hair is dead, but until the hair is pushed out of its follicle by new hair, portions of its root within the scalp are alive. Normal hair loss in the adult scalp is about 100 hairs per day [8, 9].

### Need and objectives

#### 1. Need

Hair oils that are prepared with natural ingredients are help to provide complete nourishment. The hair fall, dandruffs, split ends, gray hairs are the major problem associated with hair. Hair loss is distressing condition for an increasing number of men and women. Hair loss is a common patients problem. In such cases we use lots of hair care product to prevent this problems. To overcome and prevent hair related problems we have to need the use of safe hair care products. In such cases herbal formulaions are very useful.

Herbal formulations are help to increase moisture, luster and shine. Natural hair oils can also improve blood circulations & promotes hair growth. By considering this points we are formulating polyherbal hair oil.

## 2. Objectives

- To promote hair growth.
- To Reduce dandruff and itchiness.
- To Prevent hair loss.
- To improve and strengthen the hair by proper nourishment.
- To provide protection against dandruff.
- To reduce hair loss.

## 4. Drug profile

### 1. Hibiscus Rosasinesis

- 1.1. Scientific name: Shoebblackplant.
- 1.2. Synonym: Chinese hibiscus, China rose.
- 1.3. Family: Malvaceae.
- 1.4. Chemical constituents: Leaves and stems contain  $\beta$ -sitosterol, stigmasterol, taraxeryl acetate. and three cyclopropane compounds and their derivatives.
  - Flowers contain cyanidin diglucoside, flavonoids and vitamins, thiamine, riboflavin, niacin and ascorbic acid <sup>[10]</sup>.

1.5. Biological source: Dried leaves of hibiscus Rosa sinesis.

1.6. Plant part used: Leaf



**Fig 1:** Hibiscus Rosasinesis

### 1.7. Uses

- Hibiscus Rosasinesis nourishes and thickens hair.
- It is used as brain tonic.
- It is used for blackening of hair.
- It is used as laxative.
- It is used for promote hair growth.
- It stops the hair loss.
- It makes your hair healthy and lustrous.
- It provides nutrition and shine to hairs.
- It acts as natural conditioner.
- It is used to circulate the blood to hair follicles <sup>[11]</sup>.

## 2. Curry leaves

- 2.1. Scientific name: *Murraya koenigii*.
- 2.2. Synonym: Kadi Patta.
- 2.3. Family: Rutaceae.
- 2.4. Chemical constituents: linalool, elemol, geranyl acetate, myrcene, allo-ocimene,
- 2.5. Biological source: The species name commemorates the botanist Johann König.

The genus *Murray* commemorates Swedish physician and botanist Johann Andreas Murray who died in 1791. Hence the botanical name of the curry leaves is *Murraya koenigii* <sup>[12]</sup>.



**Fig 2:** Curry leaves

### 2.6. Plant part used: Leaf

### 2.7. Uses

- It is used to remove dead hair follicles.
- It helps to moisturize the scalp.
- Use prevents hair fall and premature graying of hair.
- It is used as antioxidants.
- It provides essential nutrients like copper, minerals, calcium, phosphorous, fiber, carbohydrates, magnesium and iron.
- It is used for antifungal properties.
- It gives antibacterial properties to hair.

## 3. Neem leaves

- 3.1 Scientific name: *Azadirachta indica*.
- 3.2 Synonym: Nim or margosa.
- 3.3 Family: Meliaceae.
- 3.4 Chemical constituents: Nimbin, nimbinene, azadirachtin, azadirachtol, azadirachnol, desacetynimbinene, nimbadiol, nimbolide, quercetin, beta-sitosterol, n-hexacosanol, nimbiol and nimocin <sup>[13]</sup>.



**Fig 3:** Neem leaves

### 3.5. Plant part used: Leaf.

#### 3.6. Uses

- It is used as antiseptic.
- It is used as antidandruff.
- It is used as antimicrobial.
- Neem helps in reducing hair fall.
- It enhance the hair growth.
- It is used as antioxidants.
- Neem is an excellent herb for treating the scalp and hair.
- It makes hairs thick and shiny.

#### 4. Amla

4.1. Scientific name: *Phyllanthus emblica*

4.2. Synonym: Indian gooseberry, Emblic.

4.3. Family: Phyllanthaceae.

4.4. Chemical constituents: *Emblica officinalis* is very high in vitamin C, pectin,

polyphenol compounds, gallic acid, ellagic acid, corilagin, phyllantidine and phyllantine (both alkaloids).<sup>[14]</sup>

4.5. Biological source: Dried fruits of *phyllanthus embilica*.

4.6. Plant part used: Fruit.

4.7. Uses:

- It is used as hair conditioner.
- It helpful to treat scalp ailments.
- It promotes hair growth.
- Amla is rich source of vitamin c, tannins, and minerals such as phosphorus, iron, calcium which provide nutrition to hair and also causes thick and dark hair.
- It conditions the scalp.
- It minimize grays.
- It reduce dandruff.

#### 5. Shikakai

5.1. Scientific name: *Acacia concinna*.

5.2. Synonym: Virala.

5.3. Family: Leguminosae.

5.4. Chemical constituents: Lupeol, spinasterol, acacic acid, lactone.

5.5. Biological source: It consist of the fruits of the plant *acacia concinna*, Linn.

5.6. Plant part used: Fruit.<sup>[15]</sup>

5.7. Uses:

- It is used as natural hair wash for sensitive scalps or to control dandruff.
- It promotes hair growth.
- strengthen hair roots and lengthy beautiful hair, these is used for herbal hair oil.
- It is used to controls hair fall.
- It prevents dryness.
- Cleans scalp without affecting the natural pH.
- Slows down premature graying of hair.
- Treats dandruff and reduces white flakes.

#### 6. Eucalyptus oil

6.1. Scientific name: *Eucalyptus globulus*

6.2. Synonym: *Eucalyptus camphora*, *Eucalyptus coriacea*.

6.3. Family: Myrtaceae.

6.4. Chemical constituents: 8-cineol and  $\alpha$ -pinene.

6.5. Biological source: Fresh leaves and branch tops of the eucalyptus plant.

#### 6.6 Uses

- Eucalyptus oil reduce hair loss.

- Promote hair growth.
- Nourishing the scalp.
- Strands with nutrients important for healthy hair.
- Eucalyptus oil is also used in creams and ointments to relieve muscle and joint pain, and in some mouthwashes.
- It is also used for flavouring agent.

#### 7. Coconut oil

7.1. Scientific name: *Cocos nucifera*

7.2. Synonym: fossil oil, calamus oil, lubricating oil.

7.3. Family: Areaceae.

7.4. Chemical constituents: The chemical constituents of *cocos nucifera* have some biological effects such as antihelminthic, anti inflammatory, antinociceptive, antioxidant, antifungal, antimicrobial and antitumor activities<sup>[16]</sup>.

7.5. Biological source: Oil is derived from dried fruits of *Cocos nucifera*.

7.6. Plant part used: Fruit.

#### 7.7. Uses

- Nourishes of hair.
- It is moisturizing effect vehicle.
- Stimulates hair growth.
- Coconut oil is also widely used in soaps and cosmetics.
- Coconut oil is packed with fatty acids that can improve hair health.
- It can also used as conditioning mask.
- Raw material for hair oil and hair tonic.

#### Plan of work

##### ▪ Literature Survey

Literature survey was carried out by Goggle search, Journals etc.

##### ▪ Collection of raw material

All the natural material used in present study i.e. Powder of hibiscus leaves, neem leaves, curry leaves are home made. And some ingredients such as amla powder, shikakai, eucalyptus oil and coconut oil were purchased from the market.

##### ▪ Methods of data collection

Observation method of the data collection will be employed for the collection of data for the present dissertation work. Data on the Formulation and Evaluation of Polyherbal Hair Oil will be collected from various standard journals and other sources like research literature databases such as Springer, Research Gate, Google scholar, Yahoo Gov, etc.

Sr. No.	Activity	Tentative time
1.	Literature survey	1 month
2.	Selection of drug and excipients	1Week
3.	Procurement of drug and excipients	1Week
4.	Experimental work	2 Months
5.	Data completion, thesis writing, printing and binding	2 weeks

#### Materials and methods

##### Collection and authentication of plant materials

The Polyherbal hair oil was prepared by collecting and using various plant materials these are, hibiscus rosasinesis

leaf, curry leaf, neem leaf, amla, shikakai, coconut oil, eucalyptus oil are collected by home and some ingredients from market. Collected plants were identified and authenticated by Dept. Of Botony, Shrimant Bhaiyasaheb Rajemane College Mhaswad.

### Method of preparation

All herbs of crude drugs are collected and dried under shade.



Drying under shade will retain active constituents.



Hence, shade drying is preferred over artificial drying.



The dried crude drugs were made into course powder using mixer.



Later on, all these coarsely powdered drugs are passed through mesh number80.



this, obtained powders are blended together to get uniform mixture.



Then the powderd mixture is added in eucalyptus oil and boiled for 15 min and were filtrated through muslin cloth.



To filtrate, coconut oil was added to make up volume.



Finally, prepared polyherbal hair oil. And it was placed in amber colored bottle. (17,18)

**Table 2:** Formula

Sr. No.	Ingredients	Quantity Taken	Uses
1.	Hibiscus	5gm	Promote hair growth, nourishes and thickens the hairs.
2.	Curry leaves	5gm	Prevent hair fall.
3.	Neem	5gm	Encouraging healthy hair growth.
4.	Amla	5gm	Promote hair growth, hair conditioner.
5.	Shikakai	2.5gm	Treat dandruff, control hair loss.
6.	Eucalyptus oil	15ml	Stimulate hair growth
7.	Coconut oil	Q.S. (50ml)	It helps to moisturize the hairs.

### Evaluation parameters

Following evaluation parameters were preferred to ensure superiority of prepared polyherbal Hair oil.

#### A. Specific gravity

Take the specific gravity bottle, rinse it with distilled water, dry it in the oven for 15 minutes, cool, close it with a cap and weigh it.

- Now fill the same specific gravity bottle with the herbal hair oil and close it with a cap and again weigh it.
- Determine the weight of the sample per millilitre by subtracting the weight (b-a).

#### B. pH

- The pH of herbal hair oil was determined using pH meter.

#### C. Viscosity

- It is an index of resistance of a liquid to flow, the higher the viscosity of a liquid, the greater is the resistance to flow.
- The viscosity was determined by using viscometer.

#### D. Acid value

##### Preparation of 0.1 molar solution

Weigh 0.56 g KOH pellets and dissolve in 100 ml of distilled water and stir continuously. The prepared 0.1 molar KOH solution was filled in the burette.

#### Preparation of sample

Measure 10 ml oil and dissolve in 25 ml of ethanol and 25 ml of ether mixture and shake. Add 1 ml of phenolphthalein solution and titrate with 0.1 molar KOH solution.

Acid value =  $5.61V \cdot N/W$

Where,

V = Volume of standard sodium hydroxide used (ml).

N = Normality of the sodium hydroxide solution.

W = Weight.

#### E. Saponification value

- 2g of oil was accurately weighed and transferred into a 250ml iodine flask.
- 25ml of 0.5 M alcoholic potassium hydroxide was added and boiled under reflux in a water bath for 30 minutes.
- Phenolphthalein was added as an indicator and titrated against 0.5M HCl ('a' ml).
- similarly blank was performed ('b' ml) without the sample.

Saponification value:  $28.05 (b-a)/w$

Where, W: weight.

#### F. Organoleptic property

- Color, odor, skin irritation was determined manually.
- Oil was applied on hand and exposed to sunlight for 5 minutes to check any irritation over skin.

#### Result

The prepared Proximate analysis and qualitative chemical test were performed polyherbal hair oil preparation. The prepared polyherbal hair oil using the above mentioned ingredients was evaluated for the following parameters and

the results are tabulated below. formulation is green to greenish brown in color with pH in accordance with human skin neutral to slightly acidic.

**Table 3**

Sr. No.	Parameters	Observations
1.	Specific gravity	1.1
2.	pH	6.8
3.	Viscosity	1.72 cp
4.	Acid value	2.80
5.	Saponification value	105.18
6.	Colour	Greenish
7.	Odour	Characteristics
8.	Sensitivity test	No irritations

### Conclusion

Polyherbal hair oil is one of the most well recognized hair treatments. Herbal formulations provides best mixture of vitamins, antioxidants, essential oils, and also provides nutrients of hair growth. These formulations maintaining good hair growth of hairs, stopping hair loss, reduces dandruff of hairs, also shining of hairs. It provides numerous essential nutrients required to maintain normal function of sebaceous glands and promotes natural hair growth. The herbal hair oil was prepared from various herbs and their importance in the formulation is presented in above. The various parameters like Sensitivity test, Viscosity, pH, Irritation test, phytochemical screening, Saponification value and Acid value of herbal hair oil were evaluated. Hence, from the present investigation it was found that the formulated herbal hair oil has optimum standards. It was concluded that formulated Polyherbal Hair Oil having good hair growing property.

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