

# Development And Evaluation Of Polyherbal Verdant Hair Oil

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**Abstract**-Like humanity and civilization itself, the idea of beauty and cosmetics is very old. So, in order to look charming and youthful, they utilise a variety of beauty products that contain herbs. This lush, multi-herbal hair oil not only hydrates the scalp, but also treats dry scalp and hair issues. It provides a variety of crucial nutrients necessary to support the sebaceous gland's normal operations and encourage organic hair growth. The goal of the current endeavor was to create herbal oil from a variety of plant parts for general use (application in hairs). This formulated hair oil contains coconut oil (**200 ml**), fenugreek seeds (**10 gms**), kalonji seeds (**10gms**), curry leaves (**15-20 leaves**), hibiscus leaves (**5-6 leaves**), hibiscus flowers (**2 flowers**), onion (**10gms**) and aloe vera (**5gms**). The evaluated herbal oil was subjected to a number of tests, including sensitivity, irritation, pH, and others. The results of these tests are described in this study.

**Keywords**— *Herbal cosmetic , Verdant polyherbal hair oil*

## 1. INTRODUCTION :

As old as humanity and civilisation itself are the ideas of beauty and cosmetics. So that they can look beautiful and young, they use various beauty products that contain herbs. The world is familiar with Indian herbs and their purposes. Herbal extracts are exactly what their name implies—herbal extracts. Given that its ancestors were found in the revered Vedas and the Unani, it is a very old method. Chemical medications, according to a friend, don't always function as miracle cures and they can have negative side effects. Herbs and the usage of natural goods are currently popular trends. An abundant supply of herbs used in the cosmetic business in India.

(Sanju et al., 2006)

One of the most crucial body passageways, hair is regarded as a protective adornment for the body and is connected to the sebaceous glands, sweat glands, and nails via the structure of the skin. The bulb, which swells at the base and emerges from the dermis, the root, or the hair that is under the skin of the

face, and the shaft, or the hair that is above the skin's surface, make up the first part of the hair. The need for natural products that encourage hair development is still high because hair loss is a skin problem. The three cyclical phases of every hair's growth are anagen (growth), catagen (complication), and telogen (rest). (Jain et al. , 2012 ) Under the D&C Act 1940: Any item intended to be rubbed, poured, sprinkled or sprayed on or put on or applied to any part of the human body for cleaning, beautifying, promoting , which attracts or modifies appearance and includes any item intended for use as an ingredient in cosmetics. (Mittal et al. , 2000) Herbal cosmetics are becoming more and more popular around the world. There are many types of decorative herbal products that are used as beauty management agents to fulfill beauty purposes. The goal of herbal hair nets is to treat hair. Herbal hair oil not only hydrates the top of the head but also wards against dry ends and hair. It offers a wide range of crucial nutrients required to uphold the sebaceous glands' regular operation and encourage organic hair development.

Hair tonics, which are herbal medications found in hair oils. In an oil basis, plant extracts are used to make them. Hair problems like baldness, gray hair, hair loss, and dry hair can all be treated with hair oil, a hair care product. Herbal hair oils not only hydrate the scalp but also ward off frizzy hair and a dry scalp. It offers a variety of vital nutrients required to support the sebaceous glands' regular operation and encourage the growth of healthy hair. The current work has been completed with this idea in mind. (Shah et al. 2018)

The objective of the current study was to create and assess a polyherbal hair oil made of herbs such as hibiscus leaves, hibiscus flowers, onions, aloe vera, fenugreek seeds, kalonji seeds, neem, and curry leaves in coconut oil. These herbs all have well-established historical promise for the treatment of hair care.

## 2. INGREDIENTS (Bhatia et al. , 2001)

### Aloevera :

Sr. No.	Scientific classification	Names
1	Biological name	<i>Aloe barbadensis</i>
2	Family	Asphodelaceae
3	Genus	Aloe
4	Species	A. vera

**Table 2.1 : Scientific Classification of Aloe vera**

### 2.1.2 Nutritional value:

Every one glass (100 ml) of pure aloe vera juice contains:

Sr. No.	Nutritional facts	Amount required
1	Calories	8 gms
2	Fibre	2gms
3	Proteins	Less than 1 gms
4	Fats	Less than 1 gms
5	Carbohydrates	2gms

**Table 2.1.2 : Nutritional value of Aloe vera**

Numerous benefits of aloe vera for hair are :

**Strengthens hair :** Numerous nutrients and active compounds found in aloe vera can strengthen your hair. Along with fatty and amino acids, it is a good source of vitamins A, B12, C, and E. These contribute to the health of hair follicles.

**Controls greasy hair :** Due to the enzymes in aloe vera that break down fats, any excess oil (sebum) is removed from your hair.

**Helps an itchy scalp :** A common inflammatory skin ailment that affects your scalp is seborrheic dermatitis. Dandruff, red skin, and scaly spots are the results. Aloe vera can greatly lessen the itching and scaliness, according to research.

**Protection from UV damage :** According to a study, drinking fresh aloe vera juice can shield you from the sun's ultraviolet (UV) rays. UV rays can make your hair harsh and less elastic, causing it to lose its sheen and color and break. The type of hair determines how much UV protection is provided.

**Hair growth :** Although some claim that aloe vera promotes hair growth, this is not supported by science. But scientists think that aloenin, a molecule in the plant, is a key element in encouraging hair growth, as seen in persons with the hair-loss condition known as alopecia. It has been used to strengthen hair, reduce breakage, and promote hair growth.



**FIG no 2.1 : Aloe vera**

**Coconut oil :**

Sr. No	Scientific classification	Names
1	Biological name	<i>Coco nucifera</i>
2	Family	Areaceae
3	Genus	Cocos L
4	Species	C. nucifera

**Table 2.2.1 : Scientific classification of coconut oil**

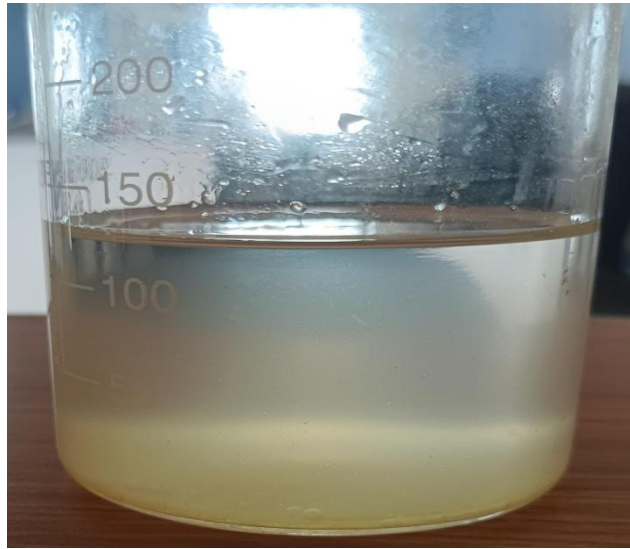
**2.2.2 Nutritional value:**

Nutritional value per 100g

Sr. No	Nutritional facts	Amount required
1	Energy	3,730 kj ( 890 kcal)
2	Fat	99 gm
3	Phytosterols	86mg

**Table 2.2.2 : Nutritional value of coconut oil**

For hair, coconut oil has a lot of advantages. It is used to treat dandruff, revive dull, damaged hair, reduce frizz, and shield hair from styling harm. On most types of hair, it is safe to use. Fatty acids found in coconut oil are great for hair health. Numerous shampoos, conditioners, styling gels, and other hair care items include it. Additionally, you can apply coconut oil directly from the kitchen jar as a pre-wash treatment or conditioning mask.



**Fig no 2.2 : Coconut oil**

**Hibiscus leaves :**

Sr. No	Scientific classification	Names
1	Biological name	<i>Hibiscus rosa-sinensis</i>
2	Family	Malvaceae
3	Genus	Hibiscus L
4	Species	Hibiscus rosa-sinensis

**Table 2.3.1 : Scientific classification of Hibiscus leaves**

### 2.3.2 Nutritional value:

One 8-ounce serving of hibiscus tea contains:

Sr. No	Nutritional facts	Amount required
1	Calories	37 cal
2	Fibre	0.3 gms
3	Proteins	0.4 gms
4	Fats	0.7 gms
5	Carbohydrates	7 gm
6	Sugar	6 gms

**Table 2.3.2 : Nutritional value of Hibiscus leaves**

Hibiscus is loaded with various beneficial ingredients that help to stop hair loss and prevent baldness.

Loaded with vitamin C, flavonoids, amino acids, mucilage fiber, and antioxidants, the extract of hibiscus leaves and flowers nourishes your hair, promotes hair growth, and provides a soft & silky



**Fig no 2.3 :Hibiscus leaves**

**Hibiscus flowers :**

**Table 2.4.1 : Scientific classification of Hibiscus flowers**

Sr. No	Scientific classification	Names
1	Biological name	<i>Hibiscus rosa-sinensis</i>
2	Family	Malvaceae
3	Genus	Hibiscus L
4	Species	Hibiscus rosa-sinensis

**Nutritional value:**

One 8-ounce serving of hibiscus flower tea contains :

**Table 2.4.2 : Nutritional value of Hibiscus flowers**

Sr. No	Nutritional facts	Amount required
1	Cholesterol	16 mg

2	Sugar	0.45 gms
3	Proteins	2.68 gms
4	Energy	16 kcal
5	Carbohydrates	0.89 gm

**Hibiscus flowers works as :**

**Works as a scalp moisturizer**

The blend of hibiscus flowers and leaves is moisture-rich and helps nourish your scalp. The mucilage content in the leaves and flowers gives it a slimy consistency that protects your hair from drying out. Regularly using this paste can nourish your scalp and make your hair soft and smooth.

**Improves hair growth**

Humans use hibiscus for hair growth as it is rich in amino acids, a prime building block of keratin. Keratin is the protein that nourishes, strengthens, and binds the hair roots. Hibiscus is known to improve the build-up of keratin and boost the formation of new hair follicles, thereby stimulating hair growth. It also thickens the hair strands to reduce hair fall.

**Cures dandruff and itchiness**

The soothing benefits of hibiscus leaves and flowers can provide lasting relief to a dry/itchy scalp. Hibiscus has astringent properties that reduce excess oil secretion, thus curing dandruff and flakiness.

**Prevents premature greying**

Hibiscus is an excellent source of antioxidants and vitamins that are needed to produce melanin, which gives our hair their natural color. Therefore, using hibiscus flowers can prevent premature graying and boost the natural color of your hair.



**Fig no 2.4 : Hibiscus flowers.**

### Kalonji seeds :

Black kalonji seeds, often referred to as nigella sativa, are the source of kalonji oil, also known as black seed oil.

Sr. No	Scientific classification	Names
1	Biological name	<i>Nigella sativa</i>
2	Family	Ranunculaceae
3	Genus	Nigella
4	Species	N. sativa

**Table 2.5.1 : Scientific classification of Kalonji seeds**

### 2.5.2 Nutritional value:

Nutrients value per 100 gm:

Sr. No	Nutritional facts	Amount required
1	Energy	375 kcal
2	Protein	17.81 gm
3	Fat	22.27 gm
4	Carbohydrate	44.24 gm
5	Fibre	10.5 gm
6	Sugar	2.25 gm

**Table 2.5.2 : Nutritional value of Kalonji seeds :**

Kalonji seeds have a variety of hair advantages. Kalonji seeds are one of the greatest components for hair care since they are high in antioxidants and have antibacterial, antifungal, and anti-inflammatory qualities. They're renowned for repairing hair damage and promoting hair growth. According to studies, hair development was improved in those with scalp conditions that cause hair to thin or shed.





**Fig no 2.5 : Kalonji seeds.**

**Fenugreek seeds :**

Sr. No	Scientific classification	Names
1	Biological name	<i>Trigonella foenum-graecum</i>
2	Family	Fabaceae
3	Genus	Trigonella
4	Species	T. foenum-graecum

**Table 2.6.1 : Scientific classification of Fenugreek seeds**

**2.6.2 Nutritional value :**

Nutritional value per 100 g

Sr. No	Nutritional facts	Amount required
1	Calories	1352 kj (323 kcal)
2	Fibre	25 gms
3	Proteins	23 gms
4	Fats	6.7 gms
5	Carbohydrates	58 gm

**Table 2.6.2 : Nutritional value of Fenugreek seeds**

**Uses :-**

### **Prevents Hair Loss**

Lecithin, a natural emollient that deeply nourishes and moisturizes your scalp and hair, is a component of fenugreek. Additionally, it strengthens your hair from the roots up by nourishing it well. Thus, it effectively manages hair shedding.

### **Revives Damaged Hair**

The protein and amino acids included in fenugreek aid to heal the hair shaft when it has been harmed by dryness, heat style, chemicals, UV damage, or color treatments. It promotes thicker hair growth by enhancing cuticle integration in the hair shaft.

### **Fights Dandruff**

Fenugreek's naturally occurring saponins have potent antifungal and antibacterial qualities that prevent microbial infections on your scalp. Fenugreek hence reduces dandruff and itching by eradicating the bacteria and yeast that cause infections on your scalp.

### **Controls Scalp Inflammation**

Fenugreek contains a potent anti-inflammatory compound that eases pain and inflammation in your hair roots. Additionally, it has natural antioxidants that aid in preventing the oxidative stress that free radicals create in the cells of your hair follicles. Fenugreek hence aids in boosting better hair development and strengthening hair roots.

### **Adds Shine And Soft Texture**

Mucilaginous fiber found in fenugreek is very effective at absorbing moisture. As a result, fenugreek contributes to the maintenance of the moisture barrier in your hair strands, which enhances shine and gives your hair a smoother texture.

### **Prevents Premature Grey Hair**

**You can effectively combat premature graying issues thanks to the high iron and potassium content of fenugreek. The mineral deficiency necessary for adequate melanin formation in your hair follicles, which naturally gives your hair the black color, is balanced by fenugreek.**



**Fig no 2.6 : Fenugreek seeds.**

**Curry leaves:**

Sr. No	Scientific classification	Names
1	Biological name	<i>Murraya koenigii</i>
2	Family	Rutaceae
3	Genus	Murraya
4	Species	M. koenigii

**Table 2.7.1 : Scientific classification of curry leaves**

**Nutritional value:**

Nutritional value per 100 gm will be :-

Sr. No	Nutritional facts	Amount required
1	fat	0.6 gm
2	Fibre	1.6 gms
3	Proteins	3.2 gms
4	Sodium	4 gms
5	Carbohydrates	2.7 gm
6	Sugar	0.3 gms

**Table 2.7.2 : Nutritional value of curry leaves**

**It's uses are :**

**Promotes Hair Growth:**

Vitamin C, Vitamin B, proteins, and antioxidants included in curry leaves support healthy blood flow to the scalp's blood vessels and aid in cellular regeneration. These qualities aid in fostering hair growth, skin rejuvenation, and improved scalp health.. The topical application of the ingredient activates the hair follicles and promotes hair growth.

**Adds Shine :**

Curry leaves are very beneficial for hair because they are a great source of amino acids. These leaves contain amino acids that maintain hair strength and give hair gloss.

**Controls Hair Loss:**

Curry leaves are a rich source of important vitamins, proteins, and nutrients that nourish the scalp,

fortify hair follicles, and stop hair loss.. Nutrients like calcium, iron, and phosphorus, give your locks much-needed nourishment.

**Prevents Premature Graying :**

Curry leaves contain vital nutrients for the scalp and are the best treatment for hair that is prematurely going gray.

**Clears Dandruff :**

Curry leaves can prevent and treat infections caused by bacteria, fungi, and protozoa. Thus, dandruff can be cleared by using curry leaves for hair.

**Repair Damaged Hair :**

Our hair is continuously harmed by pollution, heat, and chemicals in hair care products. Curry leaves, which are rich in antioxidants and alkaloids, aid in hair damage restoration.

**Assist With Dry And Frizzy Hair:**

Curry leaves provide organic compounds that keep your hair looking healthy and shiny. It helps to treat dry strands thanks to its antioxidant characteristics.

**Maintains Scalp Health:**

Curry leaves contain an oil that functions as a wonderful elixir to enhance scalp health. The antioxidant-rich oil nourishes the scalp while removing all dead skin cells.

**Strengthens The Roots:**

Curry leaves are chock-full of vitamin B5 which work wonders for strengthening hair from the roots. The vitamin also helps to fight split end formation and breakage.

**Fights Scalp infections :**

Curry leave's antifungal, antibacterial, and anti-inflammatory qualities encourage a healthy scalp. They are safe for those with sensitive scalps and guard the scalp from infections.



**Fig no 2.7 : Curry leaves.**

**Onion:**

Sr.No	Scientific classification	Names
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1	Biological name	<i>Allium cepa</i>
2	Family	Amaryllidaceae
3	Genus	Allium
4	Species	A. cepa

**Table 2.8.1: Scientific classification of onion**

**Nutritional value:**

Amount of nutrients in 100 g (3.5 oz):-

Sr. No	Nutritional facts	Amount required
1	Energy	166 kj
2	Fibre	1.7 gms
3	Proteins	1.1 gms
4	Fats	0.1 gms
5	Carbohydrates	9.34 gm
6	Sugar	4.24 gms

**Table 2.8.2 : Nutritional value of Onion**

**It's uses are:**

**Promotes Hair Growth**

Researchers found that onions boost hair growth by providing hair follicles with more nutrition and nourishment, hydrating dry hair and scalp, and promoting hair growth. Sulfur in onion juice prevents hair loss and breakage.

**Aids Grey Hair Reversal**

Onion extract contains catalase, an antioxidant that reduces hydrogen peroxide levels in hair roots, which is why many home remedies claim it can reduce gray hair.

**Quells Dandruff**

Getting rid of dandruff is one of the primary onion benefits for hair. The fungus and bacteria that cause dandruff can't thrive with the application of onion juice because of its antimicrobial and antifungal qualities.

**Prevents Hair Loss**

Onion juice has a high sulfur level, making it helpful in preventing hair loss. Sulfur helps produce collagen, which encourages development of new hair follicles.

**Solution to Alopecia**

Patchy hair loss is a symptom of the condition alopecia areata. 2014 research demonstrated the effectiveness of using onion juice to treat alopecia. According to the study, onion juice can effectively treat alopecia.

### **Prevents Itchy Scalp**

The anti-inflammatory qualities of onions aid in relieving an itchy scalp. Additionally, it improves blood flow to the epidermis, contributing to the scalp's moisture.

### **Nurtures and Moisturises Dry Hair**

The different micronutrients in onion juice strengthen fragile and damaged hair. In addition, it possesses anti-inflammatory and antioxidant qualities that help increase blood flow to the hair roots.



**Fig no 2.8 : Slices of onion**

### **3. METHODOLOGY :**

First take oil in an appropriate container (beaker) to heat.

Then add fenugreek seeds, kalonji seeds in the beaker and saute them for about 3-4 mins on low flame.

Add onions in the same beaker and let it infuse for 5 more minutes while stirring.

In the beaker add hibiscus leaves, curry leaves and hibiscus flower and again let it infuse for about 5 mins.

Cut aloe vera into pieces , add them to the beaker alongside everything and let it cook for around 15 - 20 mins.

Cool and store in appropriate storage conditions.

### **4. EVALUATION OF HERBAL OIL (Begum et al. , 2019) :**

Sensitivity test

pH

Viscosity

Specific gravity

Irritation test

**Sensitivity test:** On 1 centimeter of hand skin, the prepared herbal hair oil was applied, and the skin was left in the sun for 4-5 minutes.

**RESULT:** The polyherbal hair oil sample was found to be non sensitive.

**pH:** Using a pH meter, the pH of herbal hair oil was determined.

**RESULT:** The pH of the polyherbal hair oil sample was found to be 6.4.

**Viscosity:** Utilizing Ostwald's viscometer, the viscosity of the polyherbal verdant hair oil was measured.

**RESULT:** The viscosity of the polyherbal vedant hair oil sample was established to be 0.961 poise.

**Specific gravity:** Take the bottle of specific gravity, wash it with distilled water, dry it for 15 minutes in the oven, let it cool, cap it, and weigh it (a). Now add the sample to the identical specific gravity bottle, cap it, and reweigh it (b). Subtract the weight (b-a) to get the sample weight per milliliter.

**RESULT:** The specific gravity of the polyherbal hair oil sample was found to be 0.93.

**Irritation test :** The prepared oil is applied at the sensitive area likewise at the back of the ear and left for around 2 hours or more.

**RESULT:** The polyherbal hair oil sample was found to be non irritant.

EVALUATION PARAMETER	INFERENCE
Sensitivity test	Non sensitive
Irritation test	Non irritant
pH	6.4
Grittiness	Smooth
Specific gravity	0.93
Color	Yellowish brown
Odour	Aromatic
Viscosity	0.961 poise

**Table 4 : Evaluation of herbal oil**

## 5. CONCLUSION:

Herbal oil offers a wide range of vital elements needed to support sebaceous gland health and encourage the growth of healthy hair. The use of herbal cosmetics greatly improved healthcare and personal hygiene systems. Because of this, there is a great need for the herbal cosmeceutical personal care or health care business, which is currently concentrating and paying special attention to the creation of herbal-based cosmetics.

This study offers recommendations for producing herbal hair oils with little to no negative effects

utilizing natural substances. With its various advantages, this oil encourages hair regeneration, darkens gray hair, prevents dandruff, makes hair bright and lustrous, enhances scalp health, and increases one's confidence.

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