



# Preparation And Evaluation Of Poly Herbal Hair Growth Serum

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## ABSTRACT

Now day's cosmetics are becoming more high demand in daily life and it was used frequently by many of people per year. In mammalian system, the hair Follicle is known to the most Significant organ that determines appearance, gender distinctions, to give temperature protection. Cosmetic thus play vital role in human life. The main objective is to develop a herbal hair serum for general purpose using various herbs and to identify the best for mutation of cosmetic serum have been developed. They were evaluated for viscosity, ph, homogeneity test, spreadability test, physical appearance. Current research has revealed that herbal formulation is effective in enhancing hair.

**Keywords:** Hair Growth Cycle, BENEFITS, composition, Features, Drugs profile, Evolution Parameter

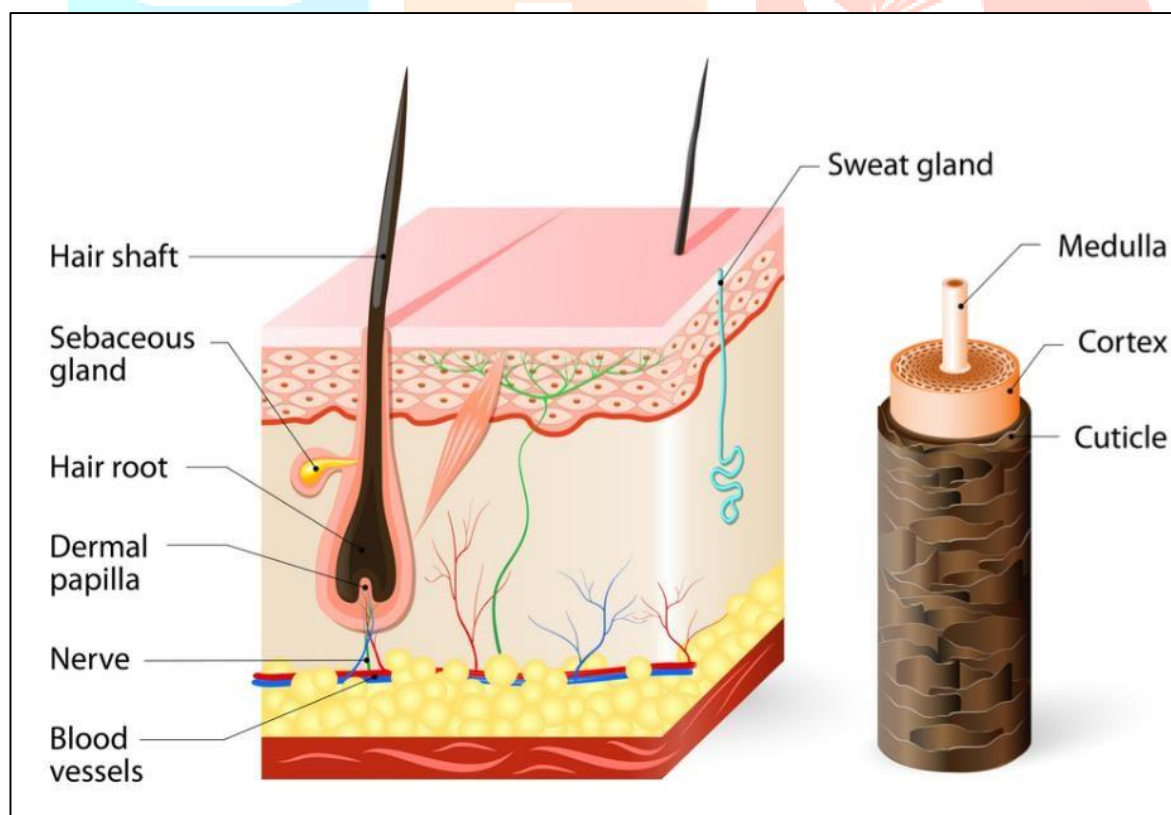
## INTRODUCTION

Hair plays vital role in human body. As hairs are considered to be one of the essential parts that complement the beauty of a person, it is important to take right care of the hairs. Hair can be defined as-improved epithelial structure formed as a result of keratinization of germinative cells”, hairs are the outgrowths from the follicles present on the skin.

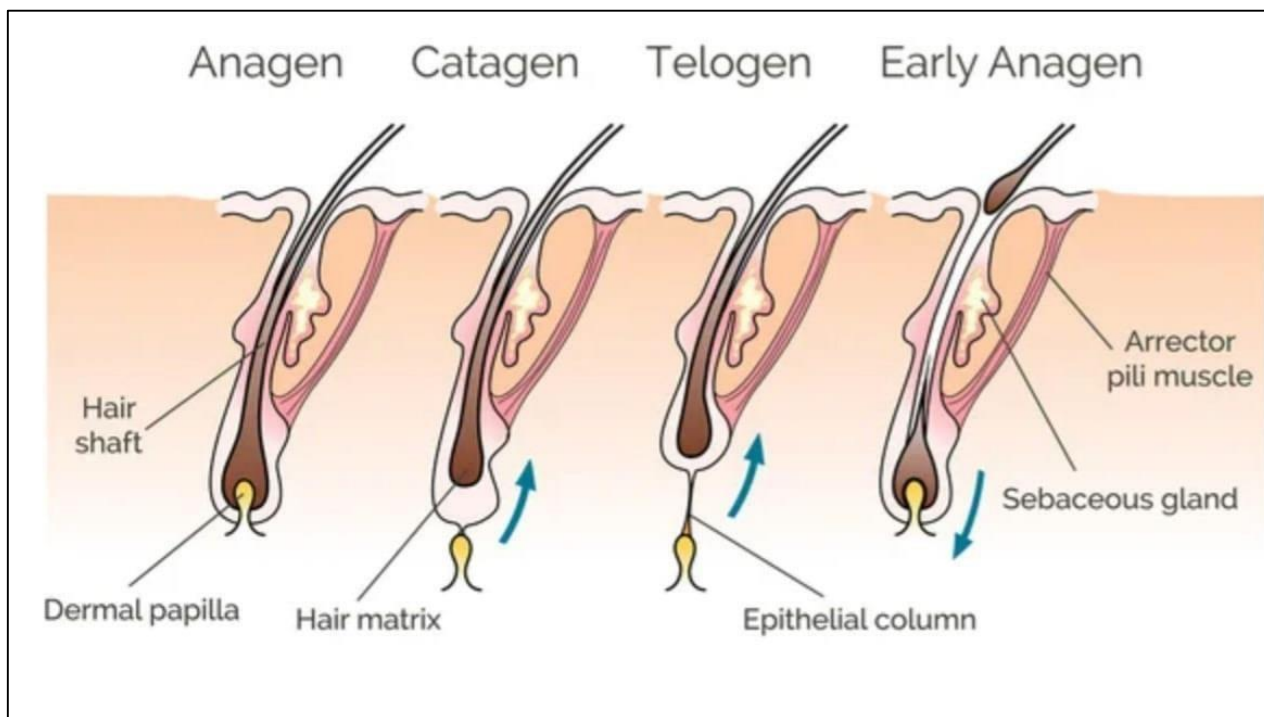
Hair growth is based on a dynamic and precisely regulated mechanism that is not fully understood. It is a cyclical mechanism involving hair shaft synthesis, elongation, and ultimately shedding. Human hair usually comprises follicles of anagen, catagen, and telogen phases. The hair follicle in the anagen phase actively accumulates cytochrome and easily develops the hair shaft. When the hair follicle matures into the anagen hair follicle, the telogen hair follicle is not able to develop neonatal hair shafts . Alopecia Aerate (AA) is a recurrent immune-mediated skin disorder with a non-scarring loss of hair. In the general

population, it has an incidence range of 1.7 percent and 2.1 per cent, with higher prevalence in young patients (21-40 years) and no significant difference in incidence between males and females reported. This condition may have a detrimental effect on the quality of life of patients in a manner close to that reported for other skin diseases such as dermatitis and psoriasis. AA's pathogenesis can be explained by the inflammatory cascades involving a breakdown of the hair follicle's immune privilege, associated with T lymphocyte invasion, and an autoimmune process that creates auto antigens from proteins associated with melanogenesis. In addition, different variables, including family backgrounds, genetic bases, environmental factors, illnesses, medications, injuries, potential emotional stress, and oxidative stress, can be implicated in AA pathogenesis. Defective antioxidant defence or exaggerated expression of reactive oxygen species (ROS) has been reported to predispose to oxidative stress, which is believed to play a significant role in many inflammatory skin disorders such as AA. In this respect, several studies have documented that AA has a detrimental effect on the blood and skin tissue's oxidant-antioxidant balance. AA's latest clinical treatments are centred primarily on immune regulation using numerous forms of medications, including topical and systemic steroids, phototherapy, and immune suppressants such as cyclosporine and methotrexate; meanwhile, certain vitamins and micronutrients are expected to play a role in the treatment of AA and can alleviate oxidative stress.

## STRUCTURE OF HAIR



## HAIR GROWTH CYCLE



## CHEMICAL COMPOSITION OF HAIR

Sr no.	Elements	%
1	Carbon	45%
2	Oxygen	28%
3	Nitrogen	15%
4	Hydrogen	7%
5	Sulphur	5%

1. Hair is a filamentous bio material consisting mainly of protein in particular keratin.
2. Hair fibers have 65–95 wt% of proteins and up to 32 wt% of water.
3. The rest of the components are lipid pigments and others. Additionally, glycine, threonine, aspartic and glutamic acid, lysine, Cysteine, and tyrosine are the amino acids that compose the major part of hair.
4. Therefore, chemically the properties of human hair are dominated by the  $\alpha$ -keratin.

## **BENEFITS OF HERBAL HAIR SERUM**

Before you finalize the product, it is important to know the benefits. A hair serum has mainly the following benefits:

### **1. Multi Purpose**

A hair serum can solve a variety of hair problems, not just one. It is also known as a one-stop solution to all your hair problems. A bad hair day is turned into a good hair day with hair serum. Your hair will feel and look different after just a few drops.

### **2. Protect Hair**

Hair serum adheres to hair strands. It also acts as an excellent shield against heat, sun damage, dirt, pollen, and pollution. It helps keep your hair from getting ruined. For this reason, it is recommended that you use a heat-protecting cream before using hot styling creams.

### **3. Shine to the Hair**

The hair serum's layer acts as a light reflector, making it easier to see your hair. Hair serums contain amino acids that protect coloured and chemically treated hair.

### **4. Prevents Hair Loss from Breakage**

When our hair becomes a tangled mess, we lose a lot of hair strands as a result of the wear and tear that goes into detangling. Hair serum acts as a lubricant for such hair and makes detangling simple. And the result is less hair fall.

### **5. Good for Dry Hair**

Hair serum are beneficial for dry and frizzy hair. hair serums keep moisture and make hair smooth and shiny.

### **6. Nourishment of Hair**

Hair serums fill the follicular gaps and revitalize brittle and damaged hair. Hair serum makes hair more manageable, making it easier to style them. Time, effort, and patience are all needed. Everything has been saved.

## ADVANTAGES OF HAIR SERUM

- 1) Hair serums can effectively soften, smoothen, and make your hair silky.
- 2) It shields the hair from environmental aggressors.
- 3) Act as both a pre styling treatment and a finishing product.
- 4) It can be used after and before heat styling. reduces frizz.
- 5) Prevent frizz. if your hair is and damaged.
- 6) Improves smoothness.
- 7) Hair serum's anti-frizz properties also improve the appearance of hair serum.
- 8) Hair serum also reduces tangles and improves shine.
- 9) To improve the straightness and curls.
- 10) It protects against damaged.

## DISADVANTAGES OF HAIR SERUM

- 1) Regular use and over application can cause the hair to become dry and brittle.
- 2) The serum on the scalp can cause inflammation, irritation and allergy.
- 3) Silicones in the hair serum can be harmful to the long hair. It can breakage of hair.
- 4) Scalp application should be avoided as it could make it oily or result in inflammation.
- 5) Its regular use and over application can make the hair unhealthy and ultimate dry.
- 6) Presence of silicon in hair serum can be harmful for long hair.
- 7) Over scalp application should be avoided as it leaves too much stickiness to the hair which will make hair too oily.
- 8) Scalp application should be avoided as it might make it oily or can lead to inflammation.

## Suitable types of hairs for using hair serum

- 1) Frizzy hairs.
- 2) Dry hairs.
- 3) Oily hairs.
- 4) Wavy hairs.
- 5) Straight hairs.
- 6) Curly hairs.

## FEATURES OF HAIR SERUM

- 1) It is a basically hair care product which is in liquid form, but its consistency is thicker than water.
- 2) It is not just for hair styling, they are also treating multi-purpose hair concerns like dry hair, dull hair and treat many hair problems include alopecia, hair fall happens because of atmosphere, medical issues, nutritional deficiencies, eating junk food, etc.
- 3) There are different kind of hair serums are available in the market to reduce hair problem.
- 4) This is silicon-based styling product that is designed to coat the surface of hair to added shine, hydration, smoothness, pollution protection, treating many problems regarding to hair, etc.
- 5) Intended to be used on wet hairs.
- 6) Take a few drops of hair serum on hand apply on damp hair.

## DRUG PROFILE

### Clove

**Synonym** - Clove flower, Clove bud

**Biological source** - Dried flower buds of *Eugenia caryophyllus*

**Family** - Myrtaceae

**Chemical constituents** - Volatile oil in (15 – 20% ), Eugenol, Caryophyllene, eugenyl acetate,  $\beta$ -caryophyllene, and  $\alpha$ -humulene.

**Use and benefits** -

- Antibacterial
- Help fight the dandruff
- Smooth dry and irritate scalp that has a dandruff
- Antiseptic





## Aloevera

**Synonym** – Aloe, Ghrithkumari, Korphad

**Biological source** - Dried juice collected by incision from the base of leaves of various bases of Aloe. Such as Aloe barbadensis Miller, Aloe perryi Baker, Aloe Africana Miller and Aloe spicata Baker.

**Family** – Liliaceae.

**Chemical constituents** - Barbaliin, Aloin, Isobarbaloin, aloe-emodin, andaloesone, Aloinoside A&B, resins.

### Use and benefits -

- Anti-inflammatory
- Antibacterial
- Antiviral
- Antitumor
- Anti aging
- Heal wouds
- Treat acne dandruff also control the hair fall nurishes the hair to provide the smoothness of hair and it avoid the dryness skin.



## Ginger

**Synonym** - Zingiber , Zingiberis and Sonth.

**Biological Source** - Ginger consists of dried rhizomes of *Zingiber officinale*.

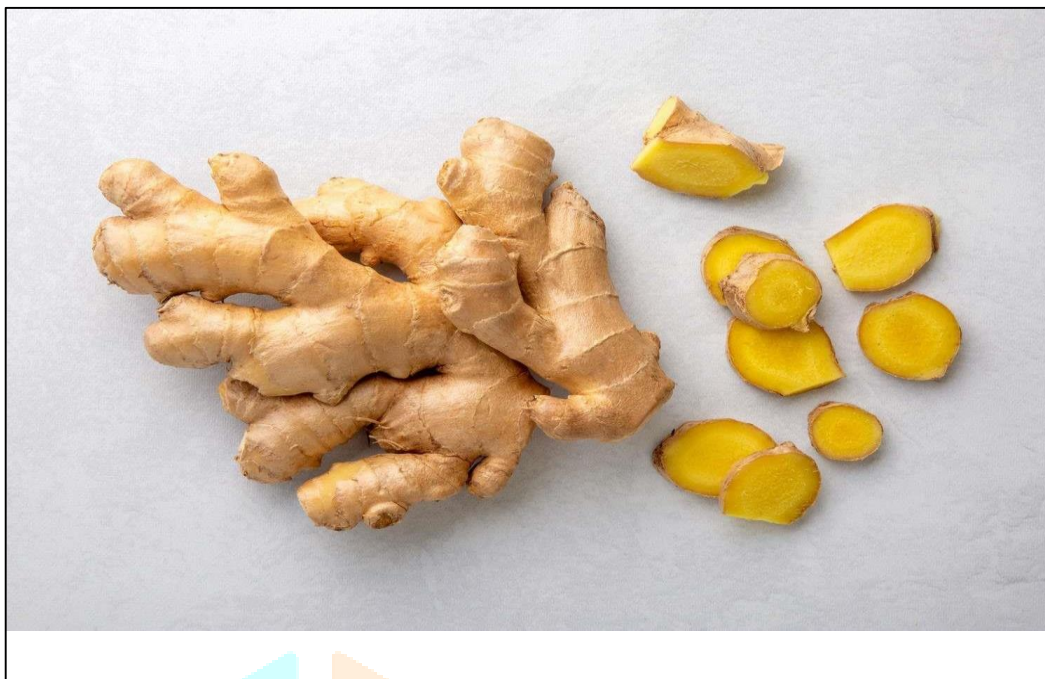
**Family** - Zingiberaceae

**Chemical constituents** - Volatile oil, phenolic compound, Sesquiterpene zingiberene, sesquiterpene alcohol, starch, gingerol.

**Use and benefits** -

- Stimulant
- Carminative
- Hair the nausea
- Antioxidant present in Ginger protect hair follicles and reduce the damage it is stimulate the hair growth and improving blood circulation to the scalp it help the straighten the roots of hair follicles
- Boost the hair growth reduces the hair loss make hair soft and shiny gets ride of dandruff.





## Bay leaf

**Synonym** - Brown leaf, tejapatra, Tamala patra.

**Biological source** - Bay leaf (*Laurus nobilis*) is a perennial shrub.

**Family**- Lauraceae

**Chemical constituents** - flavonoids, tannins, eugenol, citric acid, carbohydrate, steroids, alkaloids, triterpenoids, and essential oils.

**Use and benefits** -

- Treatment of hair loss and dandruff
- Excellent healing property
- Eliminate lice
- Promote smooth hair
- Kill bacteria and fungal infection of a scalp so use as acne problem
- Teeth whitening
- Prevent inflammation prevent cancer prevent digestion problem.



## Flax seed

**Synonym** - Javs linseed

**Biological source** - Linseed is the dried, ripe seed of *Linum usitatissimum* Linn.

**Family** - Linaceae

**Chemical Constituents** – It contains fixed oil, mucilage, protein, enzyme lipase and linamarin and carbohydrates such as sucrose and raffinose.

**Use and benefits** -

- Hydrates Frizzy Hair
- Prevents Hair Loss
- Promotes Hair Growth
- Fights Dandruff
- Prevent split ends.



## Curry leaves

**Synonym** - Kadhipatta

**Biological source** - leaves of curry tree, *Murraya koenigii* or *Bergera koenigii*.

**Family** - Rutaceae

**Chemical constituents** - linalool, elemol, geranyl acetate, myrcene, allo-ocimene,  $\alpha$ -terpinene and (E)- $\beta$ -ocimene.

### Use and benefits -

- Promote Hair growth
- Dandruff control
- Improve scalp health
- Improve digestion
- Repair damage hair.



## Lime essential oil

**Synonym** - Citrus Aurantifolia

**Biological source** - Extracted from the peel of ripe fruits (EOF) of C. Aurantiifolia.

**Family** - Rutaceae

**Chemical constituents** - terpenes (about 94% mainly (+)- limonene), sesquiterpenes, aldehydes (citral, about 3.4–3.6%, and citronellal) and esters (about 1% geranyl acetate)

**Use and benefits** -

- Lime Essential Oil Strengthen Hair Strands
- Lime Essential Oil Combats Scalp Dandruff
- Lime Essential Oil Improve Hair Smoothness.



## Coconut oil

**Synonym** - Copra oil, Naryal tel

**Biological source** - It solid part of endosperm of a coconut *cocos nucifere* L.

**Family** - Palmae

**Chemical constituents** - triglyceride, fatty acid. caprylic acid and lauric acid.

**Use and benefits** -

- Nurish the hair. And scalp
- Repair hair frizzy hair.





### INGREDIENTS TABLES

Sr.no.	Ingredients	Quantity	Role
1	Clove (extract)	2-3drops	Stimulated hair growth
2	Bayleaf (extract)	2-3drops	Rich dose of antioxidant
4	Zinger	5g	Improve the blood circulation
5	Curry leaves	1g	Reduce the hair fall
6	Lime essential oil	1/2drops	Perfume
7	Aloevera	5g	Gelling agent
8	Flax seed	5g	Gelling agent



9	Triethanolamine		Preservative
10	Coconut oil	1ml	Nourishing /surfactant
11	Distilled water	Sufficient	Vehicle
12	Caffeine extract	½-3drops	Stimulated the hair growth
13	Hibiscus	2g	Colouring agent
14	Vitamin e	1	Vitamin

## PROCEDURE FOR HERBAL SERUM PREPARATION

Procedure for preparation of 25 of herbal hair serum is divided into four parts **Solution 1 :**

1. In a beaker, add 5g flaxseeds in 50ml distilled water and apply heat.
2. Continue heating until clear, slight viscous gel is formed.
3. Filter the gel using muslin cloth.5g of fresh aloe vera gel.
4. To the obtained gel, add a fresh aloe vera gel, add 1 capsule of Vitamin E (Evion 400mg) and 1ml of cold pressed coconut oil
5. Mix the solution using magnetic stirrer for 30 minutes.
6. After, add clove and bay leaf coffee extract drop wise until homogeneous solution is obtained.

### Solution 2 :

1. In a beaker, add 1g of curry leaves in 20ml of distilled water and boil the solution for 5 mins.
2. Filter the solution and add about 5g of zinger powder and keep the mixture at room temperature.

3. Additionally, add distilled water to the solution in order to make a solution free from any lumps.

### **Solution 3 :**

1. In a beaker, add 2g of Hibiscus powder in 40ml of water.
2. Heat the solution until requisite colour is obtained.
3. Filter the solution and store.

### **Solution 4 :**

1. In a beaker, add solution 1 and solution 2 with continuous stirring with a stirrer.
2. Then, add solution 3 drop wise until suitable colour is obtained and continue stirring with a glass rod.
3. To this solution, add about 1ml of triethanolamine that acts as a preservative and 1-2 drops of lime essential oil which acts as perfuming agent .
4. Mix the solution using magnetic stirrer for 15minutes.
5. Store serum in well closed container.



## EVALUATION PARAMETER OF HERBAL HAIR SERUM

### 1. Physical Appearance

The physical appearance like colour and odour are visually tested of the prepared herbal hair serum.

### 2. Homogeneity Test

Homogeneity of herbal serum are tested by visual examination. for the homogeneity test prepared serum is transferred in airtight glass container and check under the light and check the appearance of particles in serum.

### 3. pH Test

The pH check by the digital pH meter and ph paper of polyherbal hair serum.

### 4. Viscosity

Viscosity of polyherbal hair serum check by the viscometer in a different –different rpm. for it the hair serum keep in beaker and check by viscometer.

### 5. Spreadability

Spreadability was measured by the place the formulation between to slides and keep a suitable weight above of plate and measured the spreadability.

Calculated using following formula –

$$S = M \times L / T$$

Where, S = spreadability

M = weight in the pan (tied to the upper slide)

L = Length moved by the glass slide

T = Time (in sec.) taken to separate the slides Completely.

### 6. Stability –

The prepared herbal hair serum was kept for a week at Room temperature in a well closed container. The ph and Viscosity was determined after a week and compared With the original values.

## 7. Microbial contamination – Cup Plate and

### Pour Plate Method:

Nutrient agar medium is used for the antimicrobial Assay. Nutrient agar was prepared by its prescribe Procedure and autoclaved at 121C for 45 minutes. The Sterilized media was allowed to cool at 37C – 38C. Plate were filled with nutrient agar solution and allowed For solidification. After solidification, the Microorganisms from the subculture were inoculated into the nutrient agar medium. Sub-cultured Bacteria were inoculated by striking on the surface media of the petri plate and subjected to incubation. Later 4 wells were Drawn with help of borer in each plate to receive Herbal Extract, Individual Polyherbal formulation and the marketed reference standard.

Immediately poured into it and kept for incubation for 24 Hours at 37C for growth of microorganisms and the test And standard samples to diffuse through it. After the Incubation was measured by zone meter and recorded.

### Direction of Use

- 1) Keep it in cool and dry place.
- 2) Avoid direct exposure to sunlight.
- 3) For best results, apply your initial application of hair serum to clean, damp hair.
- 4) With the help of droper it applying on hair roots and gentle massage, 5-10min.
- 5) Add 1 to 2 drops of hair serum to the palm of your hand.
- 6) Apply to your
- 7) hair, working from the ends up to the middle of your strands.
- 8) Be when applying hair serum.

### RESULT

Hair serum was prepared and evaluation was done.

Generally herbal preparations are known for its “No side effect” property. Various Problems are experienced by the people such as hair fall, split ends, dandruff, increased sebum production, hair Thinning, premature hair greying etc. Thus, people are looking for ways to increase hair development, their Prevention and care. A hair serum helps to lock the moisture and keep the scalp hydrated and healthy. Clove , curry leaves, bayleaf is a popular homemade remedy for hair growth and also improves hair density. Flaxseed is beneficial in treatment of dandruff and boosts hair growth. Aloe , curry leaves vit e is rich in anti-oxidants that Are very effective in treatment of spilt ends. Ginger has high content of gingerol which improves the blood Circulation and boosts hair growth. Coconut oil, Vitamin E, Hibiscus is also useful in treating dry and damaged Hair, provides hydration to the scalp. Thus, preparation of the herbal formulation using natural products will help In treatment of various hair diseases.

<b>Parameters</b>	<b>Result</b>
<b>Physical appearance</b>	<b>Colour – Dark Brown</b> <b>Odour - Characteristics</b> <b>Texture – Soft</b>
<b>Homogeneity</b>	<b>Good</b>
<b>pH</b>	<b>5 to 6</b>
<b>Viscosity</b>	<b>229</b>
<b>Spread ability</b>	<b>Easily Spreadable</b>
<b>Skin irritation</b>	<b>No</b>
<b>Stability</b>	<b>Good</b>

## **CONCLUSION**

All the parameters showed that they are within the limits and since all the ingredients added have many advantages, this hair serum will help in maintaining good growth of hair, turning grey hair to black, essential nutrients needed to preserve the proper function of the sebaceous glands and support the growth of natural hair. In the personal hygiene and health care system, the use of herbal cosmetics has changed by several folds. Therefore, the herbal cosmeceuticals individual care or personal health care in dustry, which is actually concentrating and paying extra care on the production of herbal-based cosmetics has a considerable glamour.

As nowadays, in the coming years, it is a fast-developing market with a mammoth scope. In cosmetic formulations, the use of bioactive ingredients has a valuable impact on body characteristics and offers nutrients that are important for preserving good and beautiful hair. It can be inferred that prepared herbal hair serum has a beneficial effect on the mechanism of hair growth and increased consistency. Medicinal plants have been used for the treatment of hair diseases since antiquity because of fewer side effects and hypersensitivity reactions. It is time to dump the chemical-laden hair care products in favour of natural alternatives. The traditional system of medicine in India acclaims a number of herbal drugs for hair growth promotion. The best part is that herbal extracts will provide microprotein supplements to hair and provide enough nourishment, resulting in safe and sound hair. Herbal cosmetics have become increasingly common in the personal care industry, and there is a high demand for them in everyday life due to their lack of parabens and sulphates.

The global herbal industry is projected to be worth more than US\$10 billion dollars, and it is increasing at a rate of three to four percent per year due to increased demand. In terms of production and demand of herbal products, Europe is the largest region, followed by Asia.

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