

# Formulation and Evaluation of Herbal Hair Serum from Leaves Extract of Moringa Oleifera Lam

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## Abstract

Human hair plays a significant role in shaping one's personality, and various cosmetic products are utilized to maintain it. Herbal cosmetics are gaining popularity due to their effectiveness and safety, especially for those suffering from hair loss, as they offer fewer negative effects and better protection. In the mammalian system, the follicle is understood to be the foremost significant organ that determines appearance, gender distinction, give violent temperature protection, and plays an element in tone-defense. Activating hair roots is promoting hair growth and reducing hair loss. Current reviews found the herbal formulation to be effective in improving hair consistency. Average citizens still use herbal preparations for lower side effects and safety profile and lower protection. A current review has shown that herbal preparations are effective in increasing hair consistency. The main ingredients used in this research is moringo leaves as an hair growth and conditioning agent as it shows hair growth properties.

**Keywords:** Cosmetics, Hairs, Herbs, Effective

## INTRODUCTION:

Herbal hair serum have gained popularity as natural alternatives to convectional hair care products, offering a blend of botanical ingredients that nourish and rejuvenate hair. These serums are formulated with a variety of herbs and essential oils known for their beneficial properties, such as promoting hair growth, reducing dandruff, and enhancing shine.

Crafted from nature's finest, herbal hair serum provides a holistic approach to hair health. They are often free from harsh chemicals, making them suitable for various hair types and concerns. As consumers increasingly seek eco-friendly and sustainable options, herbal hair serums stand out as a compelling choice for those looking to enhance their hair care routine.

Exploring the benefits and ingredients of herbal hair serums can help individuals make informed decisions about their hair care practices. Understanding how these natural formulation work can lead to healthier, more vibrant hair.

## LITERATURE REVIEW:

1) RUCHI TIWARI AND GAURAV TIWARI(2021):

Herbal cosmetics are still commonly used by average citizens because of fewer side effects and have a great therapeutic effects on hair and skin.

2) ZAWN VILLINES AND MANDY FRENZH (NOV, 2023):

- a) Use of Almond essential oil for hair growth and precautions to be taken while using essential hair oil or serum
- b) It's not compulsory that every essential oil or hair serum can be suitable for every individual.

3) SOHAN CHITLANGE and SONALI SHINDE (NOV, 2022):

- a) Petroleum ether extract of HIBISCUS ROSA SINENSIS prevents graying of hair and thickens hair.
- b) It mainly acts by transferring the telogen phase to the anagen phase.

4) ADHIRANJAN et al (2003):

There are numerous causes of hair fall in women and men. Several studies have suggested that, it is mostly related to hereditary element, scalp issues, disease condition and hormonal imbalances.

5) Ajay Kumar Meena, Ajay Yadav. M.M.Rao (2011). Herbal Medicines have been used for the Earliest times to the present day. The ethnobotanical pharmacology is as old as man himself. Herbal Medicines exhibit a remarkable therapeutic diversity. Aloe vera is an Ayurvedic Plant which is used in several traditional medicines to treat a variety of diseases.

6) Westgate, G. E, et al (1993): Reported the prolonged in vitro growths of isolated human hair follicles for at least 14 days. It is also shown that the pattern of Keratin Synthesis as determined by methionine Labelling, does not alter with maintenance.

7) ADHIRANJAN ET AL (2003) reported that there are numerous causes of hair fall in women & men. Several Studies have suggested that it is mostly related to hereditary element, Scalp issue disease condition and hormonal imbalances.

8) TAKAHASHI ET AL (1998): Studied the profile of active fraction of the proanthocyanidins was elucidated by thiolytic degradation and tannase hydrolysis. We found the constitutive monomers were epicatechin and Catechin; and that the degree of polymerization was 3.5. It was demonstrated the possibility of using the proanthocyanidins extracted from grape seeds as agents including hair growth.

## **BENEFITS OF USING HERBAL HAIR SERUM**

### **1. Repairs damaged hair**

A toxin-free hair serum is your best bet to retain the moisture in your hair. From taming frizz and flyaways to adding shine, they are designed to make your hair look healthy. They also help treat split ends and weakened hair follicles.

Our hair serums are enriched with natural extracts and hair growth oil extracts that stimulate blood circulation. In addition, these active-based products give a protective sheath to seal in moisture and repair the adverse effects of heat-inducing tools.

### **2. Improves hair growth cycle**

Poor lifestyle choices and environmental aggressors are two main causes of hair fall and dry hair. Thus, curating a targeted hair care routine is imperative to surpass the negative effects of external triggers.

In addition, using a natural serum for hair is considered an effective remedy to block the activity of 5 alpha-reductase, which causes hair loss. In addition, these serums come loaded with moisturizing agents and growth stimulators that help grow dermal papilla cells. As a result, these cells boost the growth of hair follicles. These amla hair products for natural hair range improves hair growth by treating them naturally.

### 3. It helps define curls

People with curly hair find it difficult to maintain their curly tresses. From keeping them untangled to defining their volume, they need a fair amount of attention to be managed. Our hair serums have nourishing ingredients that help lock in the wave to define the tresses better.

It is critical to opt for serums with trusted ingredients that make it easier to manage curly waves. However, you may also trust hydrating oils like jojoba, coconut, sweet almond, and argan to change hair texture positively.

### 4. It helps with chronically dry hair

Hair serums deliver adequate nutrition to lend softness to brittle and rough locks. It helps untangle the nasty knots and works as an amazing way to add life to dull hair. It doesn't need to be washed away, so it works well to relieve knots and bring luster to the lengths of hair. A natural hair serum for frizzy hair is ideal as it contains keratin and biotin.

They work best for dry and lifeless strands, keeping hair frizz-free. When applied on damp hair, it makes combing easier, making hair more manageable after hair wash. It also strengthens the hair's tensile strength and makes it appear healthier with every use.

### 5. It protects against heat and pollution

Living in a humid climate weakens the scalp, makes our hair drier and causes more hair fall. In addition, UV radiation and pollution make the situation worse. Thus, sticking to a hair care routine that includes cleaning, conditioning, oiling, and masking is critical. While hair shampoo cleanses the scalp and root, oils stimulate blood flow; serums elevate hair quality

## PURPOSE OF HAIR SERUM

- Hair serums are formulated to be applied on damp hair. Frequent usage of serums reduces tangles, nourishes the strands, and lubricates the rough strands. Their low pH level helps bind hair fibers together and thus prevents frequent hair breakage.
- In addition, they contain moisturizing agents and growth stimulators that provide strength and shine to hair and protect it from environmental aggressors. They are thus an ideal product that defines the volume of hair, thereby allowing you to try different hairstyles.
- Hair serums are designed to fight frizz, roughness, and dull strands. It is a hair styling product that softens the strands and provides shine to the overall length.
- As a result, this makes an ideal styling product that makes hair appear sleek and voluminous. Hair oil, on the other hand, contains essential nutrients that are supposed to work on the root and the scalp.
- Hair oils are meant to penetrate the hair to nourish and protect the hair, while hair serums are used to style and soften the strands.

**DRAWBACKS OF HAIR SERUM:**

- 1] Its regular use and over application can make the hair unhealthy and ultimate dry.
- 2] Presence of silicon in hair serum can be harmful for long hair.
- 3] Over scalp application should be avoided as it leaves too much stickiness to the hair which will make hair too oily.
- 4] Scalp application should be avoided as it might make it oily or can lead to inflammation.

**TYPES OF HAIR SERUM**

- 1) Moisturing Serum
- 2) Growth promoting serum
- 3) Strengthening serum
- 4) Anti-Dandruff serum
- 5) Colour-Protecting serum
- 6) Soothing Serum
- 7) Repairing Serum
- 8) Smoothing Serum
- 9) Heat Protectant Serum

**Application of Herbal Hair Serum**

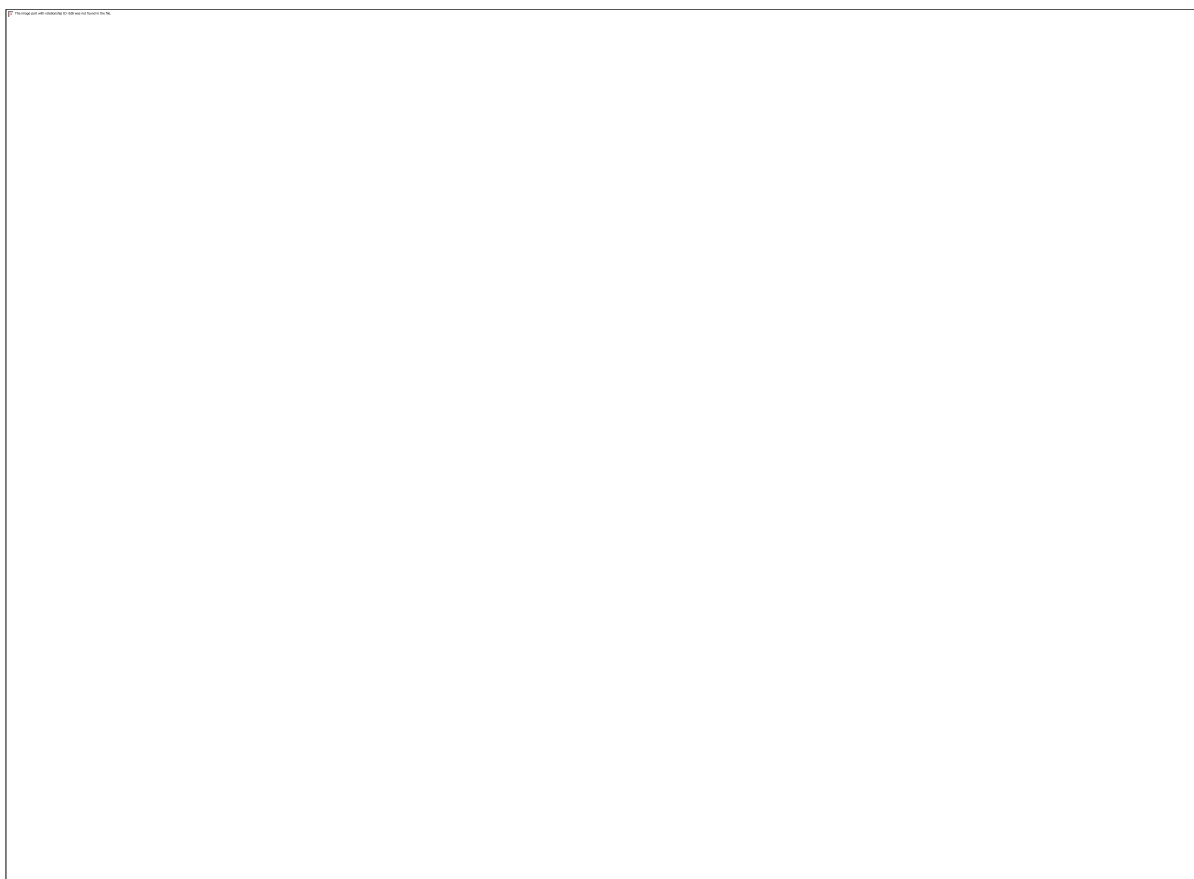
1. Hydrates and nourishes the hair
2. They help to keep hair shiny, smoothens and strengthens hair
3. They prevent free radical damage in hair
4. They prevent hair loss, and scalp infections
5. Medicated serums have antimicrobial properties.
6. They can be used as a hair growth booster and reduce hair loss.

**AIM- FORMULATION AND EVALUATION OF HERBAL HAIR SERUM****OBJECTIVES:**

1. Collection of drug.
  2. Authentication of drug.
  3. Preparation of Flaxseed Extract.
  4. Preparation of formulation.
  5. Evaluation of prepared formulation.
- Authentication
  - Literature Review.
  - Searching waste matter having potential to prepare cosmetic preparation.
  - Collection of all Ingredients required for the preparation.
  - Formulation of Herbal Hair serum Preparation.
  - Evaluation of Herbal Hair serum Preparation.
  - Compilation of data

**PLAN OF WORK**

- Literature survey
- Selection of herbal drug
- Study of morphology
- Study of chemical constituents

**DRUG PROFILE:****1) MORINGO**

**SYNONYM:** *Guilandinamoringa* L., *Moringamoringa* (L.) Small

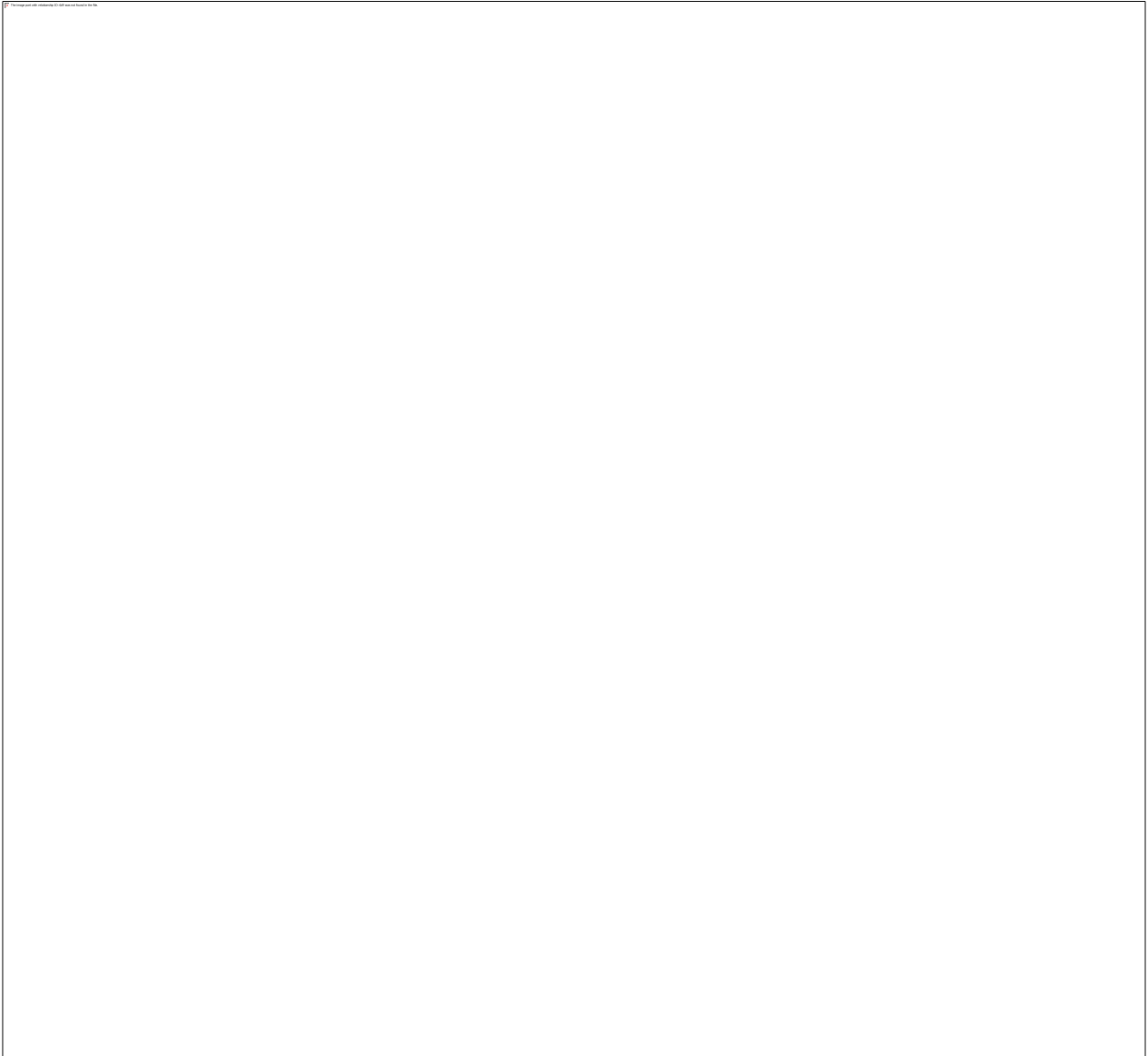
**BIOLOGICAL SOURCE:** It can consist of dried long slender, triangular seed-pods of *moringaoleifera*.

**FAMILY:** *moringaceae*

**USES:**

- A) Moringa leaves can be used to make a hair oil that provides protein and nutrients for healthy hair growth.
- B) It protect hair from damage caused by heat styling tools, UV radiation, and pollutants
- C) Moringa oil can make it easier to comb through tangled hair.
- D) Moringa possesses anti-inflammatory properties attributed to its high concentration of isothiocyanates

## 2) AMLA



SYNONYM:Amla, Indian goose berry

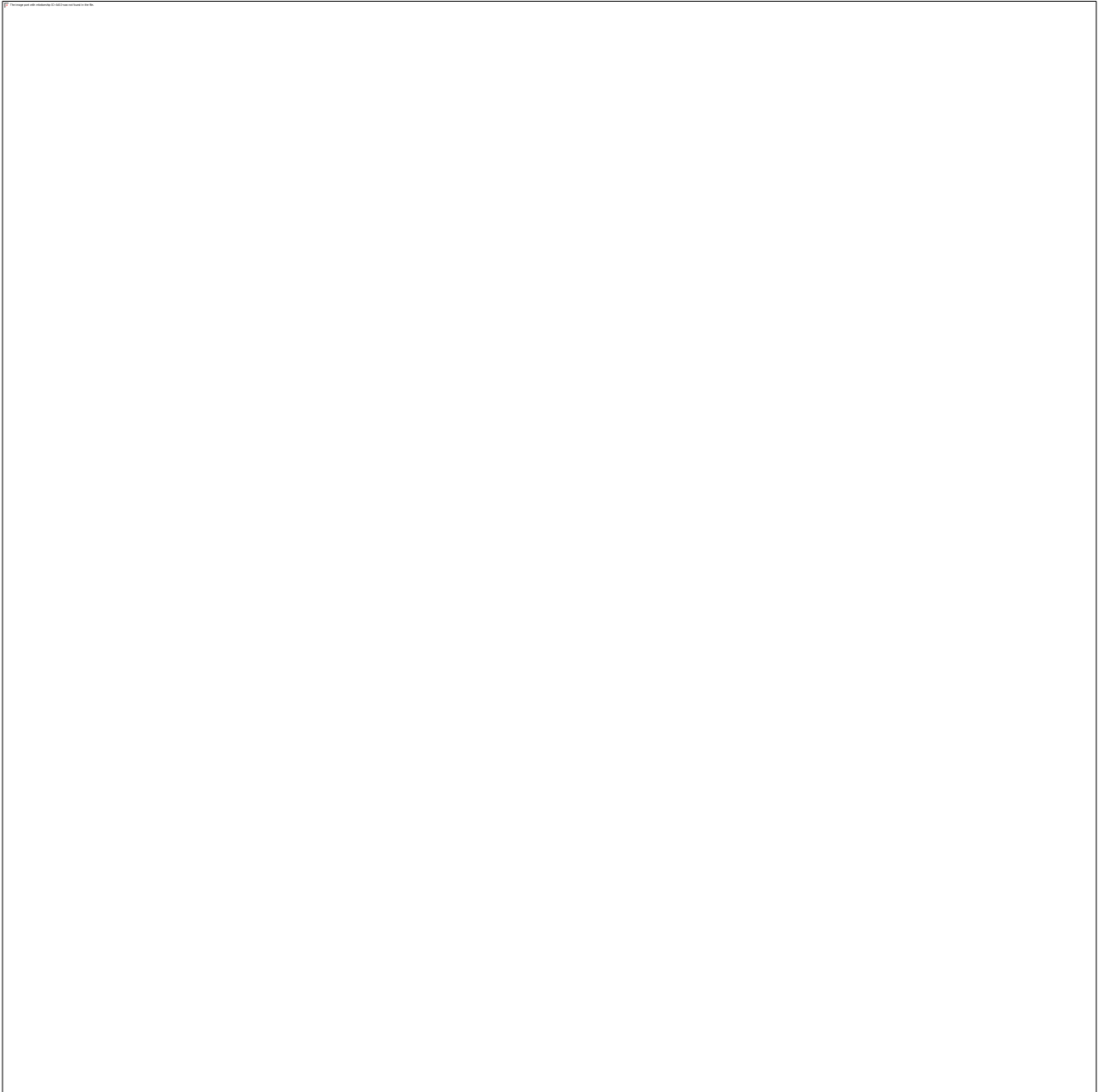
BIOLOGICAL SOURCE:

FAMILY: phyllanthaceae

USES:

- It is used for nourishing the scalp and Strengthens hair and root.
- it treats dandruff: Amla's vitamin C and anti-inflammatory properties can help prevent dandruff.
- Protects hair: Amla's tannins and calcium can protect hair from heat and photo damage.

### 3) ALOEVERA



SYNONYM:- Aloe barbadensis Mill. Aloe barbadensis var. chinensis Haw

BIOLOGICAL SOURCE:- Aloes is obtained from the dried juice of the leaves of aloe barbadensis miller.

FAMILY:-Liliaceae

USES:-

- A) It is used as Anti-inflammatory agent.
- B) It is an Anti-aging agent.
- C) It treats dry skin.
- D) It also treats stretch mark.

#### 4) HIBISCUS POWDER



- SYNONYMES: Rose mallow, Hibiscus
- BIOLOGICAL SOURCE: Hibiscus rosa-sinensis
- KINGDOME: plantae
- FAMILY: Malvaceae

• USES:

- A) Add volumes of hair and thicken hairs
- B) Treat the problems related to dandruff
- C) It stops the hair loss and make healthy hair
- D) Use as emollient trap moisture in hair and prevent dry hair freezing



## 5) ROSE WATER



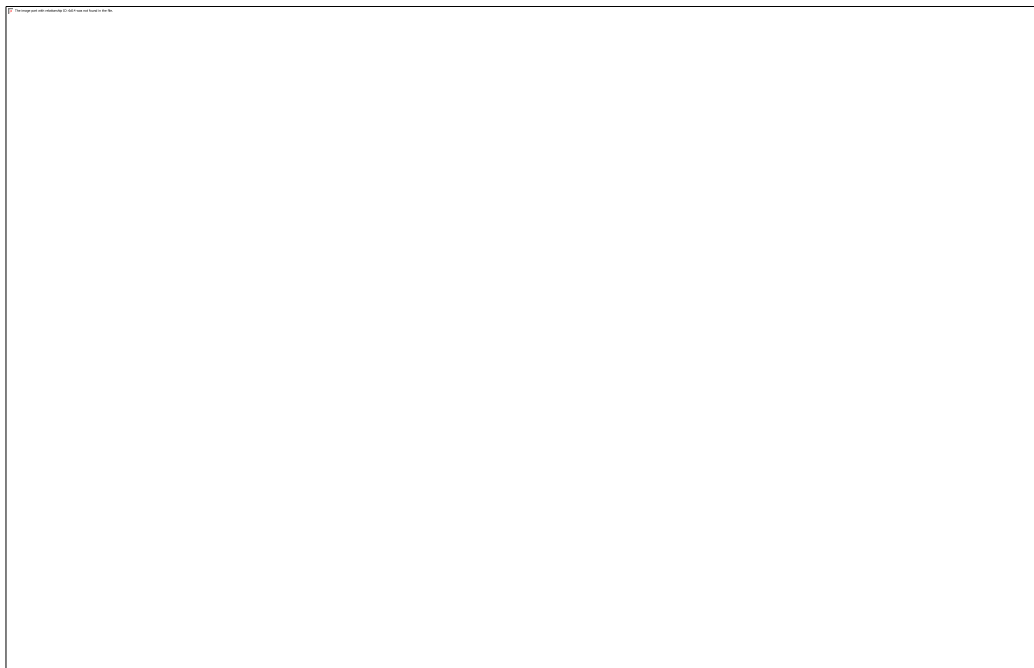
- A) Rose water is a mild astringent which may help to reduce oiliness and dandruff.
- B) It has anti-inflammatory properties, which may make it beneficial for certain scalp conditions, like psoriasis and eczema.
- C) Many women with curly hair swear by rose water's ability to calm down frizz and add shine.
- D) They often use it to tame frizz and impart a healthy shine to their locks. It's important to bear in mind that the results may vary from person to person, and

## 6) ORANGE PEELS



- SYNOYMES: bitter orange peel, Seville orange
- BIOLOGICAL SOURCE: pericarp of citrus aurantium Linn
- FAMILY: Rutaceae
  
- USES:
  - A) Protect the hair from UV rays
  - B) Help to reduce dandruff and relive from itchy scale
  - C) Bitter orange peels are used as stomachic, aromatic and carminative. Pharmaceutically, used as a flavoring's agent for several oral liquid preparations and also for the extraction of pectin.
  - D) Now-a-days, terpene less orange oil is preferred commercially as a flavoring's agent, as it has stronger flavors and is more readily soluble than natural oil. It has about 25 times stronger flavors as compared to the natural orange oil

### 7) ALMOND OIL



A) Almond oil is packed with nutrients that are good for hair, including magnesium, phospholipids, vitaminE, and omega-3 fatty acids.

B) Almond oil is the best treatment for damaged and hair loss since it strengthens and nourishes hair.

C) Your hair might get stronger and softer with the nourishing oil. Almond oil helps maintain strong, healthy hair and nails because it is high in vitamin B-7,

D) sometimes known as biotin. Its natural SPF can also aid in shielding your hair from the sun’s rays. Almond oil is a therapy for the scalp.

#### MATERIALS ANDS METHODOLOGY

|             |                                                               |
|-------------|---------------------------------------------------------------|
| Appratus    | Beaker,<br>Measuring cylinder (10ml, 20ml)<br>Stirrer         |
| Instruments | Weighing balance,<br>Digital pH meter,<br>Watswald viscometer |
| Chemicals   | Sodium hydroxide<br>Water<br>Sorbitol                         |
| Ingredients | Flaxseed extarction                                           |

**EXPERIMENTAL WORK:**

Decoction method- Decoction is a method of extraction by boiling herbal or plant material (which may include stems, roots, bark ) to dissolve the chemicals of the material. It is the most common preparation method in various herbal medicine systems

**FORMULATION TABLE:**

| Ingredients     | Parts of plants | Activities           | F1  | F2        | F3  |
|-----------------|-----------------|----------------------|-----|-----------|-----|
| Moringo plant   | Leaves          | Hair stimulant       | 3mg | 1mg       | 5mg |
| Aloe vera       | Leaves          | Cooling Agent        | 5ml | 8ml       | 8ml |
| Amla            | Fruit           | Dead scalp repairing | 4mg | 4mg       | 5mg |
| Rose water      | Flower          | Performing agent     | 1ml | 1-2 drops | 1ml |
| Orange          | Peels of fruit  | Anti-Dandruff agent  | 4mg | 3mg       | 4mg |
| Hibiscus        | Flowers         | Colouring agent      | 4mg | 5mg       | 2mg |
| Distilled water | -               | Vehicle              | qs  | qs        | qs  |
| Almond          | Seed            | Soothing agent       | 1ml | 1ml       | 1ml |

**FORMULATION OF HERBAL HAIR SERUM**

- Wash all the glassware and dry it.
- All ingredients are weight accurately amla, hibiscus powder, orange powder, moringa powder,
- Take all the powders in a beaker with sufficient amount of water and heat the mixture in water bath with continuous stirring till both the powders are miscible.
- Cool the mixture and add the almond oil, aloe vera and vitamin E in given mixture continuously.
- Then rest the mixture for 5 min and add rose water in the given mixture.
- Filter the serum and add it to a spray bottle.

**EVALUATION OF HERBAL HAIR SERUM****1) APPEARANCE:**

- Physical appearance was evaluated by observation.
- It includes the texture, colour, and smell, consistency, are studied of herbal serum.

**2) pH TEST:**

- The pH test is studied using various buffer solutions
- The tests are performed by using the digital pH meter
- The electrode of digital pH meter was dipped in the herbal hair serum formulation and the pH value is detected.
- It should have the acidic PH because the PH of skin is acidic about the 4-6

### 3) HOMOGENEITY TEST

- A clean and dry Petri dish was smeared with the hair serum and it covers with the glass seal
- The appearance of herbal hair serum was observed under the light
- Check the homogeneity of particles present in the herbal serum
- Herbal hair serum tested by visual examination for homogeneity and tested for some lumps and flocculates.

### 4) VISCOSITY

- The viscosity measurement was performed with spindle number 64 on a Brookfield viscometer at 100rpm
- The serum was placed in viscometer for 5-10 min before the measurement

### 5) STABILITY TEST

Following table reveals that the herbal hair serum was stable during the research time as this serum showed no physical instability and there were no noticeable differences in the PH before and after the study.

| Sr. No. | Parameters | Initial | Final |
|---------|------------|---------|-------|
| 1.      | pH         | 5.5     | 5.8   |
| 2.      | Viscosity  | 229     | 228   |

## RESULTS

### 1) PHYSICAL APPEARANCE:

The physical appearance, colour, odour, and texture of the prepared herbal hair serum are visually tested reflects the outcome Physical appearance of herbal hair serum.

| Parameters     | F1              | F2              | F3              |
|----------------|-----------------|-----------------|-----------------|
| <b>Colour</b>  | Greenish-white  | Greenish-yellow | Yellowish       |
| <b>Odour</b>   | Rose petal type | Rose petal type | Rose petal type |
| <b>Texture</b> | Smooth          | Smooth          | Smooth          |

### 2) pH, VISCOSITY, HOMOGENEITY, AND SPREADABILITY TEST:

The PH scale is used to specify the acidity or basicity of a product in order to ensure that it is safe to use Brookfield viscometer is used to determine the viscosity of the formulation. The value obtained is recorded in table.

| Parameters         | F1                | F2                | F3                |
|--------------------|-------------------|-------------------|-------------------|
| pH                 | 5                 | 5.2               | 5.5               |
| Homogeneity test   | Good              | Good              | Very good         |
| Spreadability test | Easily spreadable | Easily spreadable | Easily spreadable |

### 3) STABILITY TEST:

Following table reveals that the herbal hair serum was stable during the research time as this serum showed no physical instability and there were no noticeable differences in the pH before and after the study.

| Sr. No. | Parameters | Initial | Final |
|---------|------------|---------|-------|
| 1.      | pH         | 5.5     | 5.6   |
| 2.      | Viscosity  | 229     | 228   |

### DIRECTION FOR USE:

- For best results, apply your initial application Of hair serum to clean, damp hair.
- Add 1 to 2 drops of hair serum to the palm of Your hand.
- Apply to your hair, working from the ends up To the middle of your strands.Be gentle when applying hair serum.

### DISCUSSION:

The Present work of herbal hair Serum was evaluated for its organoleptic properties, physical properties and its Evaluation. The prepared formulation of herbal hair serum showed non- irritant effect on hair It also has nourishment and smoothness effects.The formulation was found in yellowish colour with oily consistency and smooth texture.The herbal hair Serum are prepared in Five formulation F1,F2,F3, the observation of F1,F2 and F3 among that the F3 was found better than other two formulations.

### CONCLUSION:

Natural cosmetics are safe to use and effective as well as in comparison with other beauty product flooded in market Suitable for all hair types and individual with the hair of any types can use the never worry about degrading hair condition Less or no side effects Product made from botanicals or, plants that are used to treat disease or maintain health are called herbal product.The natural content in botanicals have less or not any side effects on human body instead enrich the body nutrients and other useful minerals. Most of cosmetic products are firstly tested on animals to ensure the safety and efficacy for the use for the human. however natural cosmetic not need to be tested on animal. These natural formulations are tested by ayurvedic experts in laboratories. using state of equipment with no animal involved Herbal cosmetics are not expensive so that they are available at low cost.

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