

Research Article



Formulation, Development and Evaluation of Herbal Hair Serum: A Classical Approach to Enhance Hair Quality

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ABSTRACT

Nowadays, cosmetics are becoming more high demand in daily life and it was used frequently by many of people per year. Mankind uses various products to enhance beauty and elegance to look young and charming. Cosmetics thus play a vital role in human life. Now days, herbal cosmetic are widely used because of the belief that they have fewer side effects and better safety. Hair is one of the primary parts of the body which acts as a protective appendage. The main objective of the present work is to develop an herbal hair serum for general purpose (daily use) using various herbs with this evaluate the characteristics of cosmetic serum and to identify the best formulation of cosmetic serum. Three formulations of cosmetic serum (H1, H2 and H3) with different concentration of excipients have been developed. They were evaluated for its physical appearance, pH, homogeneity test, viscosity, spreadability test and stability test. All the parameters were found to be good and within the standards. Current research has revealed that herbal formulations are effective in enhancing hair consistency.

Keywords: Cosmetic, hair, herbs, formulation, effective, etc.

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INTRODUCTION

The cost increase in worldwide living standard has created a rise in demand for cosmetic products. The importance of cosmetics has increased as many people want to stay young and attractive. Cosmeceuticals refers to the combination of the cosmetics industry with the pharmaceutical industry. Cosmetics companies produce cosmetics and pharmaceutical ones produce medicines. Cosmeceuticals are skincare products that combine cosmetics and medicines.

Serum is one of the cosmetic products with very high concentration of active ingredient in their formula for providing intensive nutrition to the deeper skin layer and non-greasy finish product which suitable for skin.¹

Highlights of Hair Serum:

- Hair serum is the styling product that coats the surface of the hair known as hair serum.
- It is basically a hair care product in liquid form, its consistency thicker than water.
- Hair serum is not just meant for hair styling. They are also for treating multiple hair concerns like dry hair, dull hair, and unmanageable hair.

- There are different types of hair serums for different hair goals. Depending on the products formula, a hair serum might reduce frizz, add shine, or straighten the hair.
- This is silicone based styling product that is designed to coat the surface of hair to help impart added shine, smoothness hydration, humidity and pollution protection.
- Intended to be used on wet hair.

Suitable types of hairs for using hair serum: ²

1. Straight
2. Wavy
3. Curly
4. Coily

Advantages of Hair Serum: ^{2,3}

- Hair serum can effectively smoothen, soften and make your hair silky.
- It protects the hair from environmental aggressors.
- Act as both pre styling treatment and finishing product.
- It can be used before or after using heat styling.
- Controls frizz. If your hair is weak and damaged, it may look frizzy or dry.
- Boosts smoothness.
- The anti-frizz effect of hair serum also helps improve the smoothness of hair serum.



- Hair serum is also reduces the tangles and promote the shine.
- To enhances the straightness and curls.
- It protects against the damage.

Side Effects of Using Hair Serum: ⁴

- Regular use and over application can make the hair unhealthy and ultimately dry.
- Applying the serum on the scalp can lead to inflammation.
- Silicones present in the hair serum can be harmful for the hair in the long hair.
- Scalp application should be avoided as it might make it oily or can lead to inflammation.

Benefits of Using Hair Serum:

It is important to know hair serum benefits before you finalize the product. A hair serum predominantly has the following benefits.

1) Multi Purpose

A hair serum solves a lot of hair issues and not just one problem. There is a reason it is called a one stop solution for all your hair woes. Hair serum transforms a bad hair day into a good hair day. With just a few drops, your hair will feel and look different.

2) Protects Hair

Hair serum forms a layer on hair strands. It thus acts as an excellent protect against heat, sun damage, dirt, dust and pollution. It prevents your hair from getting damaged. This is why it is advised to use a heat protecting serum before using hot styling tools.

3) Gives Shine to the Hair

The layer formed by hair serum acts as a reflector of light thus making your hair look shiny and lustrous. Hair serums consist of amino acids which protect colored and chemically treated hair.

4) Prevents Hair fall From Breakage

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

5) Best for Dry Hair

The most to benefit from hair serums are those who have dry and frizzy hair. Hair serums lock in the moisture and makes hair smooth and shiny.

6) Nourishes Hair and Makes Them Manageable

Hair serums fill the follicular cracks and revive brittle and damaged hair. Hair serum makes hair more manageable which further makes it easy to style them. Time, energy, patience. Everything is saved.

MATERIALS AND METHODS

The crude drug required in our project was procured from nearby Ayurvedic Medical shop. The following ingredients were used for the preparation of the herbal hair serum formulation.

Ingredients of Hair Serum:

1. Aloe vera: ⁵

Aloe vera has long been used for treating hair loss. It also soothes the scalp and conditions hair. It can reduce dandruff and unblock hair follicles that may be blocked by excess oil. You can apply pure aloe vera gel to your scalp and hair a few times per week.



Figure 1: Aloe vera

2. Vitamin E: ⁶

Vitamin E-rich oil can help replace that protective layer and bring back shine. Oil in general also helps seal out moisture, reduce breakage, and protect the hair from damage.



Figure 2: Vitamin E

3. Rose Water:

Rose water is a mild astringent which may help to reduce oiliness and dandruff. It has anti-inflammatory properties, which may make it beneficial for certain scalp conditions, like psoriasis and eczema. Many women with curly hair swear by rose water's ability to calm down frizz and add shine



Figure 3: Rose Water

4. Almond Oil:

The nourishing oil can soften and strengthen your hair. It's rich in vitamin B-7, or biotin, so almond oil helps to keep hair and nails healthy and strong. It can also help protect your hair from sun damage, with a natural SPF 5. You can use almond oil as a scalp treatment.



Figure 4: Almond Oil

Procedure of Herbal Hair Serum Formulation:

1. Clean all the glassware and dry them properly as per SOP.
2. Measure the accurate quantity of aloe vera, transfer it in beaker.
3. Mix required quantity vitamin E in aloe vera.
4. Now mix rose water to the above mixture of aloe vera and vitamin E.
5. After stirring for few minutes, heat the prepared solution for few minutes.
6. Add few drops of almond oil.
7. After that stir the preparation with the help of magnetic stirrer.
8. Transfer the preparation in measuring cylinder and adjust the final volume to 30ml.
9. Transfer final solution into container.

Formulation Table:

Table 1: Formulation Table of Herbal Hair Serum

Ingredients	Batch H1	Batch H2	Batch H3	Role of Ingredient
Aloe vera	2.5gm	3gm	3.5gm	Conditioner
Vitamin E	1ml	1ml	1ml	For hair growth
Rose water	15ml	17ml	19ml	Perfume
Distilled water	10.5 ml	8ml	5.5 ml	Vehicle
Almond oil	1ml	1ml	1ml	For Nourishment

Evaluation of Herbal Hair Serum

The following parameters are used to evaluate the prepared herbal hair serum:

1. Physical Appearance:

Physical appearance was evaluated by observation on the texture, color and smell of the formulated cosmetic serum.

2. pH:⁷

The pH test will be determined by using Digital pH meter. Dipper of digital pH will be deep into the sample of serum formulation and the pH value will be recorded. The pH of the formulation should having acidic pH as the skin is having an acidic pH of around 4–6.

3. Homogeneity Test:

A clean and dry object glass was smeared with the hair serum, and a cover glass was sealed. The appearance under the light of some coarse particle/homogeneity was investigated. Herbal hair serum was tested by visual examination for homogeneity and tested for some lumps, flocculates, or aggregates.⁸

4. Viscosity:⁹

Viscosity of the formulation is determined by Brookfield Viscometer at 100rpm, using spindle type model S6 4.5 ml of the serum. The serum will placed in a big mouth container with the spindle dipped in it for about 5 minutes before the measurement.

5. Spreadability Test:

Spreadability was measured by a parallel plate process typically used to assess and measure the spreadability of semisolid preparations. One gram hair serum was pressed between two horizontal plates of dimension 20× 20 cm, the upper of which weighed 125 g. The spread diameter was measured after 1 min. Spreadability was calculated using the 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, and T = Time (in sec) taken to separate the slides completely¹⁰.

6. Stability Test:

The herbal hair serum was kept for three months at two separate temperatures of 4± 2°C and 30± 2°C, with 65% RH. Compared with the original pH and viscosity, the pH and viscosity of the herbal hair serum were determined after three months.

RESULTS AND DISCUSSION

1. Physical Appearance

The physical appearance, color, odour and texture of the prepared herbal hair serum are visually tested. Table 2 reflects the outcomes.

Table 2: Physical Appearance of Herbal Hair Serum

Parameter	Batch H1	Batch H2	Batch H3
Color	Milky	Milky	Milky
Odour	Rose type	Rose type	Rose type
Texture	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 3.

Table 3: pH, Viscosity, Homogeneity and Spreadability Test of Herbal Hair Serum

Parameter	Batch H1	Batch H2	Batch H3
pH	5	5.2	5.5
Homogeneity Test	Good	Good	Very Good
Viscosity	216	221	229
Spreadability Test	Easily Spreadable	Easily Spreadable	Easily Spreadable

3. Stability Studies

Table 4 reveals that the herbal hair serum was stable during the research time, as these serums showed no physical instability, and there was no noticeable difference in the pH before and after the study.

Table 4: Stability Study of Herbal Hair Serum

Sr. No.	Parameter	Initial	Final
1	pH	5.5	5.6
2	Viscosity	229	232

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 industry, which is actually concentrating and paying extra care on the production of herbal-based cosmetics, has a considerable glamour.

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