



Formulation, Development And Evaluation Of Herbal Hair Serum

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Abstract:

The demand for cosmetics has seen a significant rise in recent times, with a multitude of individuals incorporating these products into their daily routines. Cosmetic usage is prevalent as people seek to enhance their beauty and maintain a youthful appearance. Among the various cosmetic options available, herbal cosmetics have gained popularity due to their perceived lower side effects and improved safety profile. Hair, being a prominent feature of the body, serves as a protective element. In light of this, the primary aim of this study is to develop an herbal hair serum suitable for general daily use. The formulation incorporates a blend of herbs aimed at evaluating the characteristics of the cosmetic serum and determining the optimal formulation. Three formulations (F1, F2, and F3) with varying excipient concentrations were developed and subjected to evaluation for physical appearance, pH, homogeneity, viscosity, spreadability, and stability. Results indicate that all formulations meet established standards, demonstrating favorable physical attributes and stability. Furthermore, current research underscores the effectiveness of herbal formulations in improving hair quality and consistency.

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

INTRODUCTION

The rise in global living standards has led to an increased demand for cosmetic products. With a growing desire to maintain youthfulness and attractiveness, the significance of cosmetics has surged. Cosmeceuticals, the fusion of the cosmetics and pharmaceutical industries, have emerged to address this demand. While cosmetics companies focus on beauty products, pharmaceutical companies produce medications. Cosmeceuticals represent skincare products that blend cosmetics with medicinal properties. Serum stands out among cosmetic offerings for its highly concentrated active ingredients, providing deep skin nourishment without a greasy finish, ideal for various skin types. Preference for herbal toiletries has grown, especially for addressing hair concerns. These products promote hair growth, enhance hair beauty, and combat hair loss. Toiletries not only foster hair growth but also deliver essential scalp moisture for beautiful hair. Hair tonics maintain lipid levels, while various cosmetics, including hair grease, address hair-related issues. Hair, an epidermal derivative, significantly contributes to overall body aesthetics. Common hair problems such as hair fall, dandruff, lice, split ends, and graying are widespread. Melanin, responsible for hair color, diminishes with age, leading to white hair. An array of cosmetics, including hair care products, offer solutions to these issues. Individuals experiencing hair loss due to anxiety and stress explore various remedies, from traditional to

modern treatments like minoxidil and finasteride. Activating hair roots is crucial for promoting hair growth and preventing further loss. Hair plays a vital aesthetic role, impacting appearance and influencing social, sexual, and mental aspects of life. Changes in hair patterns, such as balding or alterations in hair abundance, can significantly affect individual confidence levels.

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 product's formula, a hair serum might reduce frizz, add shine, or straighten the hair.
- This is a silicone-based styling product that is designed to coat the surface of hair to help impart added shine, smoothness, hydration, humidity, and pollution protection.

Advantages of Hair Serum:

1. Hair serum can effectively smoothen, soften, and make your hair silky.
2. It protects the hair from environmental aggressors.
3. Both pre-styling treatment and finishing product.
4. It can be used before or after using heat styling.
5. Controls frizz.
6. If your hair is weak and damaged, it may look frizzy or dry.
7. Boosts smoothness.
8. The anti-frizz effect of hair serum also helps improve the smoothness of hair serum.
9. Hair serum also reduces the tangles and promotes the shine.
10. Enhances the straightness and curls.

11. It protects against the damage.

Disadvantages of hair serum

1. Limited availability or accessibility in some areas.
2. Slow onset of visible results, requiring long-term use.

Formulation table

Sr. No.	Ingredients	F1	F2	F3
1.	flaxseed oil	2.5gm	3gm	3.5gm
2.	Vitamin E	1ml	1ml	1ml
3.	Rose water	15ml	17ml	19ml
4.	Distilled water	10.5ml	8ml	5.5ml
5.	Almond oil	1ml	1ml	1ml

Formulation and methodology

1. Clean all the glassware and dry them properly as per SOP.
2. Extraction of flaxseed oil by using decoction
3. Accurately measure the required quantity of flaxseed oil and transfer it into a beaker.
4. Mix the necessary amount of vitamin E into the flaxseed oil.
5. Add rose water to the mixture of flaxseed oil and vitamin E.
6. Stir the mixture for a few minutes, then heat it for a brief period.
7. Incorporate a few drops of almond oil into the solution.
8. Stir the preparation using a magnetic stirrer.
9. Transfer the mixture into a measuring cylinder and adjust the final volume to 30ml.
10. Finally, transfer the solution into a suitable container.

Evaluation test

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:

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 have an acidic pH as the skin has 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.

4. Viscosity:

Viscosity of the formulation is determined by Brookfield Viscometer at 100 rpm, using spindle type model S6 4.5 ml of the serum. The serum will be 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 completely.

6. Stability Test:

The herbal hair serum was kept for three months at two separate temperatures of $4 \pm 2^\circ\text{C}$ and $30 \pm 2^\circ\text{C}$, with 65% RH. Compared with the original pH and viscosity, the pH and viscosity of the herbal hair serum were determined after three months. Between distinct data sets through dynamic visualizations Test the Sensitivity of the Eye (Draize Eye Test) Eye sensitivity was tested on three rabbits for getting the average result of sensitivity. One drop of hair serum was injected into the left eyes of the rabbits in physiological NaCl (as the control is the right eye) and then observed for 30 minutes, 60 minutes, 120 minutes, 240 minutes, 1 day, 2 days, 3 days, and 4 days. The scores of the cornea, iris, and conjunctiva were determined

Result and Discussion

1. Physical Appearance

The physical appearance, colour, 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
Colour	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	H1	H2	H3
pH	5	5.2	5.5
Homogeneity Test	Good	Good	Very Good
viscosity	216	221	219
spreadability	Easily spreadable	Easily spreadable	Easily spreadable

Conclusion

All parameters indicate that they fall within acceptable limits, and considering the numerous benefits of the ingredients used, this hair serum promises to effectively promote hair growth, restore gray hair to its natural color, provide essential nutrients crucial for maintaining healthy sebaceous gland function, and support the growth of natural hair. In the realm of personal hygiene and healthcare, the adoption of herbal cosmetics has witnessed a significant surge. Consequently, the herbal cosmeceuticals segment within the personal care and health industry, which prioritizes the production of herbal-based cosmetics, is experiencing substantial growth and allure.

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