

Review on Herbal Hair Serum

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Abstract: *The rise in living standards has led to an increase in the utilization of herbal cosmetics for personal hygiene and hair care. This review specifically examines the application of natural cosmetics in promoting healthy hair growth and preventing premature greying of hair. Serum improves smoothness, minimizes tangles, boosts shine, enhances straightness, but also safeguards against damage. These cosmetics prove to be highly beneficial and have minimal chances of causing any adverse reactions. Aloe vera offers numerous benefits for our hair and scalp, as it could moisturize and seal the hair. This moisturizing effect helps prevent a dry and flaky scalp, as well as dandruff. Almond oil not only moisturizes the scalp but also strengthens the hair follicles. To ascertain the various parameters associated with herbal hair serum, this review evaluates the various parameters encompassing physical appearance, homogeneity test, pH test, viscosity, spreadability, and other relevant factors.*

Keywords: Herbal hair serum, hair care, almond oil, viscosity

I. INTRODUCTION

Hair is one of the most important parts of the human body. Hair comes in different shapes, lengths, diameters, textures and colours. All mammals have hair. Hair plays a vital role in regulating body temperature. Hair also helps to reduce friction and protect the scalp from the sun's rays.

Hair serum is a treatment that is typically made with silicones and comes in a liquid form.^[1] It is designed to create a protective barrier on the hair strands, helping to reduce frizz. This protective layer also has the ability to reflect light, resulting in a shiny appearance without any greasiness. By using hair serum, some individuals may find that they no longer need to use straighteners to achieve smooth hair, which can significantly reduce styling time and prevent heat damage to the hair. Hair serum serves a variety of purposes beyond just controlling frizz. Depending on hair type, the appropriate serum can help with smoothing, adding shine, detangling, repairing damage, and protecting against pollution. Additionally, using hair serum can effectively conceal split ends until the next appointment with the hairdresser.^[2]

Hair serum is a hair styling product that forms a protective coating on the surface of the hair. It is essentially a liquid hair care product with a consistency that is denser than water. 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. It is intended to be used on wet hair. Hair serum can be used for straight, wavy, curly and coiled hair.^[3]

II. ADVANTAGES OF HAIR SERUM

- **Frizz and Flyaway Control:** Serums tame unruly hair and seal the cuticle, preventing moisture from entering and causing frizz, particularly in humid conditions.^[4]
- **Enhanced Shine and Smoothness:** They add a glossy, healthy, and polished look to dull or damaged hair.
- **Heat and Environmental Protection:** Serums form a protective barrier against damage from styling tools (straighteners, curlers) and external aggressors like pollution and UV rays.^[5]



- **Improved Manageability and Detangling:** By smoothing the hair, serums make it easier to detangle, comb, and style.
- **Moisture and Hydration:** They lock in moisture, which is beneficial for dry, brittle, or colour-treated hair, preventing split ends.
- **Strength and Growth Support:** Certain serums strengthen hair to reduce breakage and promote healthier growth by nourishing the hair and scalp.^[6]

III. DISADVANTAGES OF HAIR SERUM

- **Greasy and Heavy Hair:** Using too much or applying it too close to the roots can make hair look oily and weigh it down, particularly for those with fine hair.
- **Product Buildup:** Silicone-based serums can build up on the scalp and hair over time, causing it to feel coated or dirty, which necessitates more frequent washing.^[7]
- **Scalp Irritation and Breakouts:** Serums containing alcohol, fragrances, or specific chemicals can cause irritation, itching, or redness on the scalp.
- **Long-Term Dryness:** Because many serums only coat the hair for shine rather than providing deep nourishment, regular, long-term use can sometimes lead to dry or brittle, crunchy hair.
- **Masking Damage:** Serums temporarily smoothen hair, which might cause users to ignore split ends or severe damage, allowing the condition of the hair to worsen.^[8]
- **Initial Hair Loss:** Some hair growth serums might cause temporary increased hair shedding as the follicles transition through cycles.
- **Withdrawal Effect:** Constant reliance on serum might lead to a "withdrawal" effect, where stopping its use results in hair becoming dull and unmanageable.^[9]

IV. BENEFITS OF HERBAL HAIR SERUM

- **Multi-purpose**
A hair serum tackles multiple hair-related issues instead of focusing on just one. It is known as a comprehensive solution for all hair concerns. By using a hair serum can transform a bad hair day into a good one. With just a few drops on hair will experience a noticeable difference in both texture and appearance.^[10]
- **Give shine to the hair**
Hair serum forms a protective barrier that enhances shine by reflecting light, resulting in a sleek and shiny look. Amino acids present in hair serums provide protection for chemically and colour-treated hair.
- **Protects hair**
Hair serum binds to the hair strands, providing a protective barrier against heat, sun damage, dirt, pollen, and pollution. This helps to maintain the health and integrity on hair. It is advisable to apply a heat protectant cream prior to using any heat styling tools.^[11]
- **Prevents hair loss from breakage**
When our hair becomes tangled, we experience significant hair loss due to the strain and effort required to detangle it. Hair serum serves as a lubricant for tangled hair, making the detangling process easier and resulting in reduced hair fall.
- **Best for Dry hair**
Hair serums are most beneficial for individuals with dry and frizzy hair, as they help to retain moisture and promote smooth, shiny hair.^[12]
- **Nourishes hair and makes them manageable**
Hair serums penetrate the hair follicles, repairing damage and restoring strength to brittle hair. By making hair more manageable, hair serum simplifies the styling process, saving time, energy, and patience.^[13]



V. INGREDIENTS OF HERBAL HAIR SERUM

Aloe vera

Maintaining a well-balanced pH level is crucial for promoting healthy hair growth, and aloe vera gel plays a significant role in achieving this. Additionally, it acts as a natural conditioner, effectively preventing hair loss. By gently applying the gel on scalp and hair, its magical properties to nourish and revitalize on hair completely and Aloe vera has been utilized for an extensive period to address hair loss concerns. Additionally, it possesses the ability to alleviate scalp discomfort and enhance hair condition. Moreover, it has the potential to alleviate dandruff and unclog hair follicles that might be obstructed due to excessive oil production. To address these concerns, it is recommended to apply pure aloe vera gel to the scalp and hair on a regular basis, typically a few times per week. ^[14]

Almond oil

Applying almond oil, intensely moisturises on scalp and strengthens hair follicles, delivering thick, shiny, luscious tresses. If have dandruff, almond oil can help on get rid of it. It comes with anti-bacterial properties that treats flaky skin and removes dead cells from on scalp. It's a derivative of Vitamin B that's prescribed to people who suffer from problems such as thinning of hair. almond oil contains biotin, and massaging on hair with almond oil is an effective way to provide on hair with a healthy dose of biotin to promote hair growth and reduce hair thinning. Studies have shown that topical almond oil application can help prevent skin damage caused by UV radiation and help slow the aging process. Almond oil can help protect on cells by reducing DNA damage from UV rays and prevent the chemical and structural changes they can make. ^[15]

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.

Vitamin E

An oil abundant in vitamin E can aid in rejuvenating shine by reconstructing the protective barrier. Typically, oils assist in locking in moisture, reducing breakage, and shielding the hair from damage. Vitamin E has the potential to promote a healthy scalp and hair due to its natural antioxidants that can potentially promote hair growth. The presence of vitamins and antioxidants may decrease the level of oxidative stress and free radicals that contribute to the breakdown of hair follicle cells on the scalp. ^[16]

VI. GENERAL METHOD OF PREPARATION

Measure the accurate quantity of aloe vera, transfer it in beaker. Mix required quantity vitamin E in aloe vera. Mix rose water to the above mixture of aloe vera and vitamin E. After stirring for few minutes, heat the prepare solution. Add few drops of almond oil. Stir the preparation with the help of magnetic stirrer. Transfer the preparation in measuring cylinder and adjust the final volume. Pack final solution into container. ^[17]

VII. EVALUATION OF HERBAL HAIR SERUM

1. Physical appearance

The visual inspection of the herbal hair serum involves evaluating its physical characteristics, colour, and consistency.

2. Homogeneity Test

A clean and dry object glass smear with the hair serum, and a cover glass sealed. The appearance under the light of some coarse particle/homogeneity investigates. Herbal hair serum test by visual examination for homogeneity and tested for some lumps, flocculates, or aggregates. ^[18]



3. Ph

The Ph meter calibrates using Ph 4 and Ph 7 buffer solutions. Then, the electrode soak in the hair serum and left until the Ph normalized after a few minutes.

4. Viscosity

The viscosity measurement performs with spindle number 6 on a Brookfield viscometer. In the beaker, 50 ml of hair serum, and the viscosity was measured at various rpm, i.e., 10, 20, 50, 100.

5. Spreadability Test

The spreadability of the liquid preparation evaluates using a parallel plate method commonly employed for this purpose. A gram of hair serum sandwich between two horizontal plates measuring 20x 20 cm, with the top plate weighing 125 g. The diameter of the spread record one minute later.^[19]

Spread ability was measured using the following formula:

$$S = ML / T$$

Where

S = Spreadability,

M = Weight in the pan (tied to the upper slide),

L = Length moved by the glass slide, and

T = Time(sec) taken to separate the slides completely

6. Stability Test

The herbal hair serum underwent storage for a duration of three months at two distinct temperatures of $4 \pm 2^\circ\text{C}$ and $30 \pm 2^\circ\text{C}$, alongside 65% RH. Following this period, an assessment conducted to compare the initial Ph and viscosity values with those obtained after the three-month storage period.

VIII. CONCLUSION

The literature and standard formulations reviews in this study demonstrate that a synergistic blend of Aloe vera, almond oil, rose water, and Vitamin E provides an effective, natural alternative to synthetic, silicone-heavy hair treatments. By utilizing the moisturizing and scalp-soothing properties of Aloe vera and the nutrient-dense profile of almond oil, such herbal formulations successfully address common hair concerns such as frizz, mechanical breakage, and dryness without the adverse reactions associates with synthetic chemicals. The compiled evaluation parameters from various studies confirm that these herbal serums maintain a bio-compatible pH range that aligns with the scalp's natural acidity, while optimal viscosity and spread ability profiles ensure an ideal texture for cosmetic application. Ultimately, this review highlights that herbal cosmetics effectively meet modern consumer standards for hair protection and nourishment, establishing a sustainable and safe pathway for future innovations in personal care chemistry.

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