

RESEARCH ARTICLE

Formulation and Evaluation of Herbal Hair Serum

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Received: 07th February, 2023; Revised: 27th April, 2024; Accepted: 21st May, 2024; Available Online: 25th June, 2024

ABSTRACT

In daily life, there is a rising demand for cosmetics and are used by a large number of individuals annually. Humanity employs a variety of goods to accentuate elegance and attractiveness in order to appear youthful and endearing. Therefore, cosmetics are essential to human survival. Because of the perception that herbal cosmetics are safer and have fewer adverse effects, they are utilized extensively these days. One of the main bodily components that serve as a protective appendage is hair. The spreadability test and stability test results were all assessed. It was the development of a daily-use herbal hair serum is the main objective of this study. To achieve this, a range of herbs will be employed, and the ideal formulation will be determined by evaluating the cosmetic serum's qualities. Three different cosmetic serum formulations (H1, H2, and H3) with different excipient concentrations have been developed. Physical properties, pH, homogeneity test, and viscosity ensured that every parameter fulfilled the norms and was in good condition. Herbal compositions have been shown to be useful in improving hair consistency.

Keywords: Eco-friendly, Formulation, Nourishment, Serum

International Journal of Drug Delivery Technology (2024); DOI: 10.25258/ijddt.14.2.17

How to cite this article: Yenurkar YN, Ingle RG. Formulation and Evaluation of Herbal Hair Serum. International Journal of Drug Delivery Technology. 2024;14(2):714-716.

Source of support: Nil.

Conflict of interest: None

INTRODUCTION

One essential component enhancing the overall beauty of the body is hair, which is derived from the epidermis. A few issues people deal with with their hair are dandruff, hair fall, and gray hair. Age-related melanin deficiency results in white hair since it is the pigment responsible for the color of hair. This illness may negatively impact patients' quality of life in a manner that is consistent with the observations with other skin conditions including dermatitis and psoriasis. Hair grease is one of the many cosmetics that are available nowadays to solve these issues. The scalp has over 100,000 terminal hair follicles at birth, each of which is predisposed to produce long, thick hair. The most vital organ in the mammalian system, hair, is thought to determine appearance and gender differences, provide protection from extremely cold temperatures, and aid in self-defense. Alopecia is typically the outcome of hair loss that is not temporary. Those who experience extreme worry and stress due to hair loss look for a variety of cures, ranging from traditional healing methods to folklore, spiritual healing, and the usage involving finasteride and minoxidil. In order to reduce hair loss and encourage the growth of hair, hair roots must be activated. While there have been some scientific attempts to stop hair loss and promote hair growth, none of them have shown much promise.¹

The stem cells that make up the dermal papillae atrophy because the hair follicles have DHT receptors induce the cells to shrink as a result of DHT attaching to them. Humanity has been using aloe vera for its medicinal benefits, particularly on the skin, in traditional medicine for thousands of years. This plant is among the oldest that is known to exist, and the first record of its usage by humans is found on an Egyptian Papyrus from the Greek philosopher Aristotle described the advantageous therapeutic properties of aloe vera in his writings. A developing trend in personal care regimens, especially for hair care, is the use of natural and herbal products. Since they are thought to help promote hair health and vitality while reducing exposure to potentially dangerous chemicals found in traditional hair care products, herbal hair serums have become more and more popular. Enzymes, plant extracts, and other natural substances with nourishing and energizing qualities are frequently combined in these serums.²

One of the biggest projects in cosmetic science is the creation and assessment of herbal hair serums. A solution that not only addresses a particular. This study aims to contribute to the hair difficulties but also satisfies customer expectations for efficacy and safety created *via* a meticulous selection and mixing of herbal extracts and other active components. Increasing amount of information on natural hair care products

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by looking at the main ingredients of herbal hair serums and their possible advantages. It also discusses the formulation and assessment processes. As customer demand for clean beauty solutions rises, the study's conclusions may help develop safer, more environmentally friendly substitutes for conventional hair care products. The direct topical activity of tocopherol, which does not influence other organs, has long been recognized, and one of the authors, Kamimura, has published a few publications regarding this action. The experiment that follows is covered in this paper because it was found in previous studies that local microcirculation and hair growth were inextricably linked. If this is the case, then B tocopherol should naturally have a positive impact on hair growth as well, which is why the expected results were obtained.³

Strong antioxidant qualities found in vitamin E are well known, and they do wonders for shielding hair from harmful environmental elements like pollution and UV radiation. It prevents breakage and encourages healthy development by providing the hair follicles with substantial nourishment. Furthermore, vitamin E promotes blood circulation in the scalp, which speeds up hair development and guarantees that every strand gets the nutrients it needs to be as healthy as possible. But our hair serum is not your average vitamin supplement. Your hair will feel silky smooth without feeling weighed down because of its lightweight, non-greasy composition, which guarantees simple application and fast absorption. Whether you're fighting humidity or attempting to fix heat-damaged locks, our serum acts as a barrier to shield your hair against environmental pressures and style damage.⁴ Envision a hair serum that minimizes frizz and flyaway while strengthening and protecting your hair from the inside out. You can get salon-quality results at home with our vitamin E-enriched hair serum, which is a potent blend of nature and science. Utilizing vitamin E hair serum, find the secret to hair that radiates strength and energy. Say hello to the best hair days you've ever had with the aid of our innovative serum since every hair strand deserves to be given the care and nourishment it requires.⁵

Your hair care routine will be transformed into a unique sensory experience with the help of our serum, which contains sandalwood oil, which is well-known for its grounding and relaxing perfume. Beyond only its alluring aroma, though, are several advantages. Rich in vitamins and antioxidants, sandalwood oil gets right into the hair follicles to replace moisture and give even the parched strands life again. With good cause, coconut oil has long been praised for its nutritional qualities. Rich in critical vitamins, minerals, and fatty acids, coconut oil thoroughly penetrates the hair shaft to offer intensive hydration and revitalization from root to tip. Coconut oil is the ideal multitasker for all your hair care requirements, whether you're fighting split ends, heat damage, or just want to bring out the natural sheen in your hair.⁶

MATERIALS AND METHODS

Wash and properly dry all glassware in accordance with SOP. Accurately measure the amount of aloe vera and pour it into a beaker. Then the necessary amount of vitamin E in the aloe

Table 1: Proposed ingredients for serum formulations

S. No.	Ingredients	Formulation 1	Formulation 2	Formulation 3
1	Aloe vera (gm)	3	6	4
2	Vitamin E (mL)	1	2	1
3	Sandalwood oil (mL)	5	6	5
4	Coconut oil (mL)	1	2	2

vera. Then add sandalwood oil to the aloe vera and vitamin E combination that was previously combined. Heat the prepared solution for a few minutes after a few minutes of stirring. Add it into a small amount of coconut oil. Triturate in mortar and pestle after a few minutes. Fill the solution at a dry container (Table 1).⁷

Evaluation Parameter

Physical evaluation

By examining the texture, color, and scent of the prepared herbal serum, the physical appearance was assessed.

pH

To find out the pH test findings, a digital pH meter will be utilized. The pH value of the serum formulation sample will be recorded when the digital pH dipper is firmly inserted. The pH of the formulation needs to be acidic since the skin has an acidic pH of 4 to 6.⁸

Homogeneity test

The formulation's viscosity is measured using a spindle type S6 4.5 mL model of serum and a Brookfield Viscometer set at 100 rpm. About 5 minutes before to the measurement, the spindle will be immersed in the serum in a large mouth container.⁹

Spreadability test

One common utilizing this technique allows one to assess and measure the spread ability of semisolid preparations. Parallel plate technology. Two 20 by 20 cm horizontal plates, the top one weighing 125 g, were squeezed together to hold one gram of hair serum. Following one minute, the spread diameter was measured. Utilizing the following formula, spreadability was determined.

$$S = M.L/T$$

Where S stands for spreadability, M for weight in the pan (attached to the top slide), L for length moved by the glass slide, and T for time (in seconds) required to fully separate the slides.¹⁰

RESULTS AND DISCUSSION

Physical Appearance

Examining the produced herbal hair serum visually determines its physical characteristics, color, smell, and texture. The results are shown in Table 2.

pH

To determine if a product the pH scale is used to assess if something is safe to use, how basic or how acidic it is (Table 3).

Table 2: Physical appearance of herbal hair serum

<i>Parameters</i>	<i>Batch H1</i>	<i>Batch H2</i>	<i>Batch H3</i>
Color	Pale yellow	Pale yellow	Pale yellow
Odor	Characteristic	Characteristic	Characteristic
Texture	Smooth	Smooth	Smooth

Table 3: pH test of herbal hair serum

	<i>Batch H1</i>	<i>Batch H2</i>	<i>Batch H3</i>
pH test	5.5	5.7	5.7

Table 4: Homogeneity test of herbal hair serum

	<i>Batch H1</i>	<i>Batch H2</i>	<i>Batch H3</i>
Homogeneity test	Very Good	Good	Good

Table 5: Spreadability test of herbal hair serum

	<i>Batch H1</i>	<i>Batch H2</i>	<i>Batch H3</i>
Spreadability test	Easily spreadable	Easily spreadable	Easily spreadable

Homogeneity Test

A clear clarity apparatus is used to determine the homogeneity test of the formulation of herbal hair serum (Table 4).

Spreadability Test

The spreadability apparatus is used to determine the spreadability test of the formulation of herbal hair serum (Table 5).

CONCLUSION

This hair serum will assist in preserving healthy hair growth, turning gray hair black, providing vital nutrients required to maintain the healthy operation of the sebaceous glands and promoting the development of natural hair because all the metrics showed that they are within acceptable bounds and because all of the additional substances offer several benefits. The application of herbal cosmetics in personal hygiene and the medical system has evolved significantly. Due to their natural

components and possible health advantages for hair, herbal hair serums have become more and more popular. An herbal hair serum’s efficacy is contingent upon its composition, which ought to have advantageous plant oils, herbal extracts, essential oils, and vitamins. Together, these components improve, feed, and protect the hair and scalp. The manufacturing of herbal-based cosmetics is the focus of individual or personal health care with herbal cosmeceuticals business, which is incredibly glamorous.

ACKNOWLEDGMENT

The authors are thankful to the Datta Meghe Institute of Higher Education and Research, Wardha, for their financial support.

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