

A Review on Formulation and Evaluation of Herbal Hair Serum

Kalekar Vaishali Dhananjay¹, Gosavi G. P.², Mukke Sanika Venkat³, Narhare Vaibhavi Tukaram⁴

Student, B Pharmacy, Shivlingeshwar College of Pharmacy, Almala, India^{1,2,3,4}

Assistant Professor, Department of Pharmaceutical chemistry, Shivlingeshwar College of pharmacy, Almala, India²

Abstract: *The scalp is a crucial component for hair growth, and human hair is regarded as one of the symbols of beauty in people. It is the layer of soft tissue skin that covers the skull and the hair-growing region of the head. One type of cosmetic product that has a high concentration of active ingredients in its formula is serum, which gives the deeper layers of the skin intense nutrition and a non-greasy finish that is good for skin. One of the essential components that contributes to the overall elegance of the body is hair, an epidermal byproduct. A few issues that people generally deal with are hair loss, dandruff, lice, split ends, and gray hair. A hair has three parts: the root, the shaft, and the tip. Melanin, the pigment responsible for hair color, stops functioning in aging people, causing their hair to turn white*

Keywords: Hair serum ,Herbal product , Hair care , Plant based , Hair growth

I. INTRODUCTION

Hair serum is a liquid-based treatment that is typically made with silicones to provide the hair a protective coating while also helping to smooth frizz. Serum then reflects the light off this silky layer, giving your hair a glossy, non-greasy finish. Some find that this eliminates the need to use straightness to smooth their hair afterward, which is fantastic for halving styling time and protecting their hair from heat damage.[1]

Unbeknownst to most, hair serum isn't only used to control frizz. Numerous issues can be resolved with the correct serum for your hair type, ranging from detangling, adding shine, and smoothing to mending damage and offering pollution protection.[2]

HIGHLIGHTS OF HAIR SERUM:

- > Hair serum is the styling substance that is applied to the hair's surface[2].
- > It is essentially a liquid hair care product with a thicker consistency than water. [3]
- > Hair serum has uses beyond hair styling. They are also used to address a variety of hair issues, such as unruly, dull, and dry hair. [4]
- > Different hair objectives require different kinds of hair serums. A hair serum may straighten hair, add gloss, or lessen frizz, depending on the product's recipe.
- > This is style product is based on silicone and is intended to be applied to the hair's surface to help enhance shine, smoothness, hydration, humidity, and pollution protection. [4]
- > Designed to be applied on damp hair.

INGREDIENTS

Sr. No.	Ingredients	Role
1	Rosemary leaves	Antioxidant
2	Flaxseed gel	Nourish
3	Black seed	Anti-inflammatory
4	Fenugreek	Antimicrobial
5	Vit e	Preservative
6	Aloevera	Smoothing
7	Rose water	Perfume

ROSEMARY



Synonyms : Rosemary ,Rosmarinus officinalis (former scientific name) , Salvia rosmarinus (current scientific name)

Family : Lamiaceae (Mint family)

Biological Source: The plant *Salvia rosmarinus*, a member of the Lamiaceae family of mints, is the source of rosemary.

Geographic Source: The Mediterranean region is the native home of rosemary. Today, it is grown all over the world in areas with moderate climates, such as sections of Asia, North Africa, Europe, and the United States.

Chemical Composition - The chemical composition of rosemary includes:

1. Essential oils (1-2%): Cineole ,Camphor , Borneol , α -Pinene , Limonene
2. Phenolic compounds: Rosmarinic acid , Caffeic acid , Chlorogenic acid
3. Flavonoids: Diosmin , Luteolin
4. Terpenoids: Ursolic acid , Oleanolic acid
5. Other components: Tannins , Saponins

Rosemary's Applications for Hair [4]

1. Encourages Hair Development
2. Prevents Loss of Hair
3. Addresses Scalp Conditions and Dandruff
4. Enhances Hair Texture
5. Naturally Darkens Hair

FLAXSEED –



Synonyms - Flaxseed mucilage Linseed polysaccharide Flax mucilage extract

Family - Linaceae

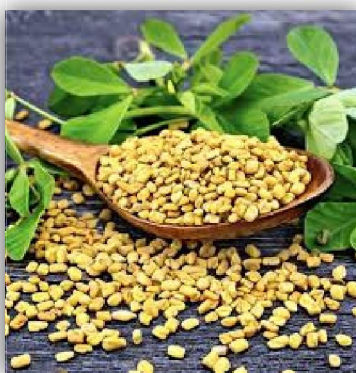
Biological Source: The mucilage obtained from the seed coat of *Linum usitatissimum*, also referred to as flax or linseed, is known as flaxseed hair.

Geographic Source: Canada is the major producer and it is widely grown in temperate zones. China, India, and Russia United States European nations such as Belgium and France

• **Use:[5]**

It strengthens hair, improves manageability and gloss, and lessens dandruff. After letting it sit for half an hour to an hour, rinse it off with a gentle wash. By combining flaxseed oil and water in a spray bottle, it can also be turned into a conditioning mist. 13 Nov 2024

FENUGREEK



Synonyms - Greek Hay Bird's Foot Methi (Hindi) Hu Lu Ba (Chinese)

Family - Fabaceae

Chemical Composition - Fenugreek contains

1. Alkaloids: Trigonelline, hydroxyisoleucine
2. Steroidal Saponins: Diosgenin, yamogenin, gitogenin, and tigogenin
3. Flavonoids: Vitexin, isovitexin.
4. Amino Acids: •

Uses:[5]

It reduces dandruff on the hair's scalp by acting as an antibacterial and antidandruff agent. Although the precise process is unknown, fenugreek is known to support the growth of healthy hair. Fenugreek is thought to improve blood flow to hair follicles and steroid saponins, which physiologically interact with the production of dihydrotestosterone (dHT). The dried seeds of *Trigonella foenum-graecum* are the biological source.

L. Belongs to the Leguminosae (Fabaceae) family.

NIGELLA SATIVA (BLACK SEED)



Synonyms - Black seed, Black cumin, Nigella, Kalonji, Habbat al-Barakah (Arabic for "seed of blessing")

Family – Ranunculaceae

Chemical Composition - Black seed contains a variety of bioactive compounds, including: Thymoquinone (major bioactive component), Nigellone, PCymene, Carvacrol, Anethole, Alkaloids, Saponins, Fixed Oils: Linoleic acid, oleic acid, palmitic acid, Proteins and amino acids

Use n. Sativa seeds and their oil have been used for millennia to cure a wide range of illnesses worldwide, and they play a significant role in the traditional Indian medical system. In addition to having the best natural ingredients for mouthwash and toothpaste, nigella sativa seed oil may be the best component for treating a variety of bacterial and fungal infections, including dandruff, acne, pimples, and other skin conditions in products like skin clarifying cream, antidandruff shampoo, and anti-acne cream. The best option for promoting natural hair development is Nigella sativa. [8,9]

VITAMIN E (TOCOPHEROL)



Synonyms - 1. Tocopherols, 2. Tocotrienols, 3. Alpha-tocopherol (most biologically active form)

Chemical Composition - Vitamin E includes eight compounds: Four tocopherols: alpha, beta, gamma, and delta; Four tocotrienols: alpha, beta, gamma, and delta. Core structure: Chromanol ring with an isoprenoid side chain.

Biological Source - Found in a variety of plants, seeds, and oils. Rich sources include nuts, seeds, green leafy vegetables, and vegetable oils. Family: Belongs to the Vitamin Family of compounds. Specifically classified as fat-soluble vitamins.

geographic sources - Soybean and sunflower oils (South America, North America), Palm oil (Southeast Asia), Wheat germ (Europe, North America)

Uses- A vitamin E-rich oil can help to restore shine by rebuilding the protective layer.

ROSEWATER



Synonyms : Gulab Jal (Hindi), Aqua Rosae, Rosa Damascena Water, Floral Water

Chemical Composition:

1. Phenolic Compounds: Examples: Quercetin, kaempferol, Responsible
2. Terpenes: Examples: Geraniol, citronellol

3. Alcohols Examples: Ethanol, benzyl alcohol

4. Aldehydes and Ketones Examples: Phenylacetalde

Biological Source: The petals of the Damask rose (*Rosa damascena*) or other rose species, such *Rosa centifolia*, are used to make rose water. --- Roseaceae family

Geographic Sources 1. The Valley of Roses in Bulgaria is a significant producer of premium rose water, primarily from *Rosa damascena*. Its distinct aromatic profile is influenced by the soil and environment.

Use Balances and Calms the Scalp Anti-inflammatory

Provides Softness and Shine A natural conditioner is rose water. [9,10]

FORMULATION TABLE -

Sr. No.	Ingredients	Quantity
1	Rosemary	10 ml
3	Black seed	15 ml
2	Flaxseed gel	10 ml
4	Fenugreek	10 ml
5	Vit e	5 ml
6	Aloevera	20 ml
7	Rose water	30 ml

II. METHODOLOGY

Here's a formulation for a 100 mL herbal hair serum using the mentioned ingredients:

10 milliliters of rosemary extract (which promotes hair growth and enhances scalp circulation)

15 mL of flaxseed gel, which strengthens and hydrates hair

10 mL of black seed oil, which nourishes the scalp and lessens hair loss

Ten milliliters of fenugreek extract, which guards against dandruff and is high in protein and nicotinic acid

5 mL of vitamin E oil, which enhances shine and serves as a natural preservative

Aloe Vera Gel: 20 mL (hydrates hair and calms the scalp)

Rose Water: 30 mL (provides scent and serves as the serum's foundation)

STEPS TO PREPARE:

Create the Base: In a sterile, clean mixing dish, mix the aloe vera gel and rose water. To make a uniform liquid foundation, whisk until smooth.

Incorporate Herbal Extracts: Add the fenugreek extract, flaxseed gel, black seed oil, and rosemary extract gradually. Make sure all the ingredients are properly dispersed by giving it a good stir.

Add the vitamin E oil to include vitamin E. For a consistent consistency, thoroughly mix.

Bottle the Serum: Using a pump or dropper, pour the serum into a 100 mL glass or plastic bottle that has been sanitized. To maintain the natural qualities, store in a cold, dark location.

HOW TO APPLY

[20]



1. Begin by shampooing your hair.
2. Pat your hair dry, but not completely.
3. Depending on the length of your hair, take a tiny amount.
4. Apply the serum on your palm to warm it up.
5. Use on hair.

EVALUATION PARAMETER –

1. Physical appearance:

The texture, color, and scent of the created cosmetic serum were assessed in order to gauge its physical appearance. [6]

2. Ph:

A digital pH meter will be used to determine the test's pH. A digital pH dipper will be inserted deeply into the serum formulation sample, and the pH value will be noted. Since the skin has an acidic pH of around, the formulation's pH should also be acidic.

3. Viscosity:

5 ml of the serum and a Brookfield viscometer set to 100 rpm are used to measure the formulation's viscosity. Before the measurement, the spindle will be immersed in the serum for approximately five minutes in a large mouth container. [13]

4. Spreadability test:

A parallel plate method, commonly used to evaluate and quantify the spread ability of semisolid preparations, was utilized to determine spreadability. A single gram of hair serum was sandwiched between two 20 x 20 cm horizontal plates, the upper of which weighed 125 g. After one minute, the spread diameter was measured. The following formula was used to determine spreadability: [14]

$$S = m \times l / t$$

5. Test of stability

For three months, the herbal hair serum was stored at two different temperatures—4± 2°C and 30± 2°C—with a relative humidity of 65%. After three months, the herbal hair serum's pH and viscosity were measured and compared to the initial values. [15]

ADVANTAGES OF HERBAL COSMETICS OVER SYNTHETIC:[17,18]

- Natural products:
- Safe to use:
- compatible with all skin types:
- Fits your budget
- Not tested on animals:
- No side effects:

III. CONCLUSION

Both men and women use hair cosmetics extensively. Before being used by consumers, proprietary cosmetic compositions undergo significant testing. Overall, hair problems are rare because to their broad use, although they are more likely in people who often style and color their hair. Temporary cosmetic changes are less harmful to hair than permanent styling. Because they haven't recognized the pre-existing or accumulated hair damage caused by the use of other products or treatments, people may appear with an acute or chronic hair problem and solely attribute it to the most recent cosmetic procedure or product.

Comprehending the coloring and permanent style procedures is crucial for a precise clinical evaluation of the patient's hair. Because of its higher safety profile, less adverse effects, and improved protection, herbal cosmetics are still widely used by regular people. Recent studies have demonstrated the efficacy of herbal formulations in improving the consistency of hair. Hair serums made with herbal cosmetics are a great complement to hair care regimens and provide a number of advantages.

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