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FORMULATION AND EVALUTION OF HERBAL HAIR SERUM: A CLASSICAL APPROACH TO ENHANCE QUALITY.

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ABSTRACT:

The aim of this work is red onion essential oil extraction for a variety of medicinal, chemical and industrial uses.

Thus, preparation of the herbal formulation using natural products will help in treatment of various hair diseases. In the mammalian system, the hair follicle is known to be the most significant organ that determines appearance, gender distinction, provides intense temperature protection, and plays a role in self-defence. The younger generations have begun suffer from extreme hair loss problems due to many lifestyle-related changes such as fatigue, anxiety, intake of junk foods, use of different hairstyling/colouring methods, etc.

Herbal hair serums have surfaced as a natural and effective result for promoting hair health, reducing hair fall, and enhancing hair texture without the adverse goods associated with synthetic phrasings. This study/ expression explores the development of an herbal hair serum using factory- grounded constituents similar as Aloe vera, flaxseed, Retha, Hibiscus, onion peel excerpt, and essential canvases like lavender. These constituents are known for their antioxidant, anti-inflammatory, and antimicrobial parcels that nourish the crown, strengthen hair roots, stimulate hair growth, and help dandruff. The serum is non - greasy, easy to apply, and suitable for all hair types. primary evaluations suggest significant advancements in hair hydration, strength, and overall appearance with regular use. The expression emphasizes sustainability, safety, and the remedial eventuality of traditional sauces in ultramodern hair care.

Keywords: - cosmetic, hair, herbs, formulation, effectiveness, etc.

INTRODUCTION

The cosmetic word derived from Greek word " kosmetikos" means to "adorn". According to medicine and ornamental act 1940 and rules 1944 cosmetics are any article intended to be combed, discharged, mottled, scattered on, introduced into or differently applied to the mortal body or any part thereof for spring-cleaning, enhancing, endorsing, appeal or altering the appearance. The word cosmetics stems from its use in early Rome.

Now adays makeup plays important part for both women and men. Cosmetics are available in the different form's composites, aquileges, spices, eye shadow, nail polish, hair serum etc. Herbal cosmetics are the phrasings which contain one or further herbal constituents used to cure various problems. gravies use as maintain and enhancing mortal beauty. Indian gravies and its consequence popular worldwide. Herbal cosmetics demand adding in world request day by day. The wisdom of Ayurvedic had employed numerous gravies and floras to make cosmetics for enhancement and protection from external affects the herbal cosmetics doesn't beget large side goods on mortal body. Root enclosed in hair follicle submerged into skin, hair shaft is harbourage of hair present above the skin. Keratin is large patch made up of lower unit called amino acid.

Hair grows from a point called follicle. At the end of Follicle network of blood vessels supply aliment to hair help to grow called papillae. The most important Sebaceous gland that secret oil painting. painting help keep hair condition. The hair rhizome has special calls known as melanocytes, which produce colour called as melanin. Melanin gives colour to hair. Keratin makes hair both durable and flexible. These helices are connected by durable bonds between amino acids. The bonds make hairs strong. [1,11]

• **Medulla-** Honeycomb like keratin structure, which has deepest subcaste of hair shaft seen in large and thick hair.

• **Cortex-** it is a Middle layers of hair shaft which give Strength, colour & texture of hair fibre. Made with a thin subcaste of keratin. It is made from technical cells called as melanocytes melanin. In which hair cortex contain melanin.

• **Cuticle-** It is a thin and tintless protection which covers the cortex. External subcaste of hair shaft. Made up of 6-11 keratin cells. It takes significance care of hair shaft and follicle. [2]

PHASES OF HAIR GROWTH:

1. **Anagen (Growth Phase)**-This is the active growth phase where the hair follicle produces new cells. It lasts 2 to 7 years and determines the length of your hair. About 80-90% of the hairs on your head are in this phase at any given time.

2. **Catagen (Transition Phase)**-A short phase lasting about 2 to 3 weeks. Hair growth prevents, and the hair cavity shrinks. Approximately 5% of hairs are in this phase.

3. Telogen (Resting Phase)-Lasts about 3 months. The hair doesn't grow but stays in the follicle. Around 10-15% of your hair is in this phase.

4. Exogen (Shedding Phase)-Sometimes considered part of the telogen phase. Old hairs are shed, making way for new anagen hairs. It's normal to lose 50–100 hairs a day during this phase. [3]

Suitable types of hairs for using hair serum: [4]

1. Straight 2. Coily

3. Wavy 4. Curly

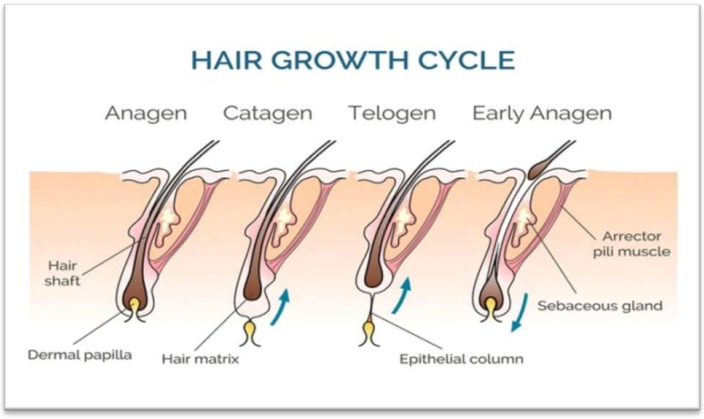


Figure 1: Hair growth cycle

MATERIALS:

1) ALOE VERA

• **Synonym-** Aloe, Musab bar, kumari.

• **Biological source-** It is obtained from leaves of various species of aloe-vera- aloe barbadense, aloe perry, aloe spicata, aloe African

• **Kingdom-** Plantae

• **Order-** Asparagales

• **Family** - *Liliaceae*

• **Genus: -** Aloe L.- aloes

•**Chemical constituents: -** Anthraquinone glycoside is a measure source of aloe vera. aloin, barbaloin, aloe-emodin.

• **Uses: -** 1) To make stronger hair.

2) To provide Antioxidant properties.

3) To Progress texture of hair.

4) To Helps hair growth. [5]

Figure:1 Aloe vera

2) FLAXSEED

• **Botanical name:** Linum usitatissimum

• **Biological source:** It is obtained from consists of the dried fully ripe seeds of linum usitatissimum linn. Omega-3 fatty acids, liganans etc.

• **Family**: *linanceae.*

• **Synonym**: Linseed, flaxseed.

• **Uses**:

1)To provide antioxidant properties.

2) To use as hair growth stimulator.

3) To anti-inflammatory properties. [5,10]

Figure :2 Flaxseed

3) REETHA

• **Botanical name:** Sapindas mukorossi

• **Family -** *Sapindaceae*

• **Biological source -** It consist from the dried fruit of Sapindas trifoliatus.

•**Chemical constituents:** Saponins like oleanane, 10%sugar, dammarane, triterpenes, etc.

• **Uses:** Surfactant, anti-inflammatory, fungicidal, etc. [6,7]

Figure:3 Reetha

4) HIBISCUS:

• **Botanical name:** Hibiscus Rosa sinensis

• **Family –** *Malvaceae*

• **Synonym –** Hibiscus, Hibiscus mutabilis, Roselle.

• **Biological source –** It is consist from the petals of flower of Hibiscus Rosa sinensis.

•**Chemical constituents** –Vit. A, C, fatty acid, polysaccharides, quercetin etc.

• **Uses –** Colouring agent, promote hair growth, prevent hair fall. [6,7]

Figure:4 Hibiscus

5)ONION

- **Botenical name:** Allium cepa.
- **Family***: Amaryllidaceae*
- **Synonym:** Allium cepa.
- **Biological source** -It is obtained from the species of flowering plant in the genus Allium.
- **Chemical Constituents:** allicin, quercetin, fisetin etc.
- **Use:** Hair growth, reduce hair breakage. [8,12]

Figure:5 Onion

6) ROSE WATER:

It is a mild astringent which may help to reduce oiliness. It has anti-inflammatory properties, which may make it helpful for certain scalp conditions, like psoriasis and eczema. It leaves a very fresh natural sent. It contains vitamins A, C, D, E &B3 which nourish the hair follicles and can promote stronger growth, many women with frizzy hair aware of rose water's ability to calm down frizz and add shine. [5]

Figure:6 Rose water

7) LAVENDER OIL:

It is an essential oil extracted from the flowers of the lavendulan vera plant. It's known for its calming fragrance and numerous therapeutic properties, making it one of the most popular essential oils in aromatherapy and natural remedies. (9)

Figure:7 Lavender oil

METHODOLOGY:

1. Take ingredients accurately.

2. Prepare powder form of onion, reetha, hibiscus, aloe vera, sieve and prepare into fine powder.

3.weigh ingredients accurately.

4.Prepare its extract by using Soxhlet apparatus method.

5.Filter extract of onion, reetha, aloe vera. further evaporation of hibiscus.

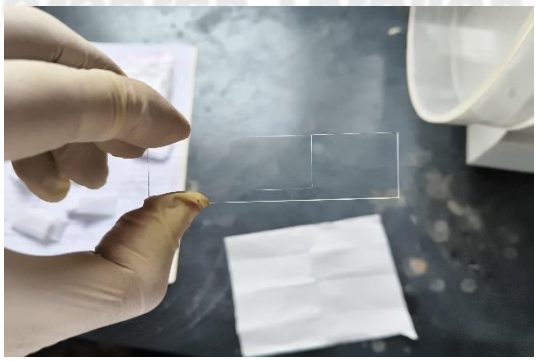
6.In one beaker firstly take reetha extract then aloe vera then onion and hibiscus extracts, mixed with continuous stirring.

7.Add rose water and lavender oil drop by drop by using magnetic stirrer and filter the formulation. And add into a container of serum.

Evalution of herbal hair serum:

1. Visual Inspection: The herbal hair serum's appearance, including colour and texture, was evaluated. (8)

2. Homogeneity Test: The hair serum's homogeneity was assessed by applying it to a glass slide and examining it for any signs of aggregation or unevenness. (8)



3. Viscosity Assessment: The hair serum's viscosity was measured using a Brookfield viscometer, with a spindle number 6, at different rpm values, using a 20ml sample.

4. pH Measurement:

The pH meter was calibrated using standard buffer solutions of pH 4 and pH 7. After calibration, the electrode was immersed in the hair serum and left undisturbed for a few minutes until the pH reading stabilized.

5. Skin Irritation Test:

The serum was applied to the skin, and any signs of irritation—such as redness or itching—were observed after two hours. Additionally, the test area was exposed to sunlight for 10 minutes, followed by inspection for rashes or discomfort.

6. Spreadability:

Spreadability was assessed using the parallel plate method, commonly employed to evaluate the ease of spreading semisolid formulations. One gram of hair serum was placed between two vertical glass plates measuring 20 × 20 cm, with the upper plate weighing 125 g. After one minute, the diameter of the spread area was recorded. Spreadability was calculated using the formula:

$$S = (M \times L) / T$$

Where:

S = Spreadability

M = Weight on the upper slide (125 g)

L = Diameter of spread (in cm)

T = Time taken (in seconds)

7. Stability Study:

The herbal hair serum was stored for three months at two temperature conditions—42 °C and room temperature (approx. 30 °C)—with 65% relative humidity. After the storage period, its pH and density were re-evaluated and compared with the initial values to assess stability. (12)

RESULT AND DISCUSSION:

1.**Physical appearance:**

The physical appearance, odour and texture of the prepared herbal hair serum are visually tested.

PARAMETER	OBSERVATION
Colour	Brownish yellow
Odour	Aromatic
Texture	Smooth

2. PH, Homogeneity and Spreadability Test:

pH scale is used to specify the acidity basicity of a product in order to ensure that it is safe to use.

PARAMETER	OBSERVATION
PH	6.21
Homogeneity	Good
Spreadability	Easily spreadable

3. Viscosity:

RPM	10 rpm
CPS	6700

CONCLUSION:

All parameters were found to be within acceptable limits. Given the multiple benefits of the added ingredients, this hair serum supports healthy hair growth, helps restore natural hair color by turning grey hair black, provides essential nutrients for the proper function of sebaceous glands, and promotes the development of natural hair. In the realm of personal hygiene and health care, the use of herbal cosmetics has significantly increased. Consequently, the herbal cosmeceutical industry which focuses on personal care products has gained considerable attention and prominence due to its emphasis on herbal-based formulations.

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