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FORMULATION AND EVALUATION OF HERBAL HAIR CONDITIONER SHAMPOO BY USING EXTRACT OF FENUGREEK SEEDS

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ABSTRACT
Hair is an imperative part of the human body which protects the scalp. Hair Conditioner is a hair care product, which is applied to the hair and hair tips after shampoo in order to condition the hair and then it is rinsed out. Hair Conditionerused to improve the manageability and to enhance lustrous look of hair. Its main purpose is to reduce friction between the hair strands to allow easier brushing and combing. The main objective is to develop the most effective hair care product to meet people's compliance, and to evaluate the prepared hair care product to establish desired effect on the user. In Herbal Hair Conditioner, Fenugreek seeds and mint leaves were used as main ingredients. Herbal conditioner formulations containing plant extract of herbal ingredients such as fenugreek seed and mint leaves can prevent hair loss and retain hair conditioning and stimulate hair loss.

KEYWORDS: Herbal Hair Conditioner, Plant Extract, Physicochemical Parameters, Stability testing, Herbal Conditioner, Aloe vera.

INTRODUCTION

Hair conditioner is a hair care product that is applied after shampooing in order to condition the hair Conditioning helps protect your hair and restore it. Conditioner means a preparation used to improve the condition of hair. The product is beneficial to all types of hair. It works by restoring moisture, and smoothing the cuticles of the hair follicles. Hair conditioner comprising of powerful antioxidants can reduce UV damage to the hair including hair colour changes and protein damage. Herbal Conditioners are meant to stop most of the hair issues. Since natural conditioners are free from chemicals. The main ingredients used are Fenugreek seeds which are rich source of iron and protein two essential nutrients for hair growth, they also contain unique composition of plant compounds, including flavonoids and saponins. Hair conditioner is often a viscous liquid that is applied and massaged into the hair. Conditioner contains a variety of conditioning and moisturizing ingredients that are left behind on the hair after rinsing and affect the hair characteristics. The primary conditioning agents include quaternate surfactants (quats), cationic polymers, silicones, emollients, and humectants. Hair conditioners ingredients. Conditioners may contain moisturizers oils and sunscreen, among other are frequently acidic, as low pH protonates the keratins amino acids. The hydrogen ions give the hair a positive charge and creates more hydrogen bonds among the keratin scales, giving the hair more compact structure. Herbal Conditioners are meant to stop most of the hair issues. Since natural conditioners are free from chemicals. The main ingredients used are Fenugreek seeds which are rich source of iron and protein – two essential nutrients for hair growth they also

contain unique composition of plant compounds, including flavonoids and saponins. These compounds are presumed to induce hair growth due to their anti-inflammatory and antifungal effects.

Advantages of herbal conditioner

- Gives hair shine and softness
- Reduce split ends
- Improve manageability
- Prevent hair breakage
- Protects hair from chemical and mechanical damage.

Disadvantages of Hair Conditioners

- Using a hair conditioner that is not suitable for your hair type can be disadvantageous for your hair. If you have thin hair, use gentle conditioners
- Poor-quality hair conditioners cannot bond properly with your hair and fail to provide your hair with strengthening and smoothening effects
- If applied to the scalp, conditioners can make the roots of the hair oily or greasy
- Conditioning excessively can make the hair more prone to breakage
- Some conditioners contain chemicals that can irritate the skin and cause allergic reactions.

Classes of Conditioner

• Regular rinse off conditioner
• Intensive treatment conditioner
• Leave-in products

Intensive Treatment Conditioner

• Not for daily application.
• They are used for intensive treatment.
• Contain a higher level of active ingredients that are kept on the hair for a longer period of time.
• Sold as thicker creams to provide the perception of higher conditioning

Biology of Human Hair

Hair is an important mammalian trait where hair shafts perform a variety of different functions, such as thermoregulation, sensory information gathering, environmental trauma defense, social communication, and camouflage. An approximate number of 5 million hair follicles (HF) are seen by each of us, of which 80,000 to 150,000 are located on the scalp. The HF is one of the human body's most complex mini-organs, with the ability to reconstitute itself. HFs show cyclic activity patterns during postnatal life with cycles of active growth and hair development (anagen), involution driven by apoptosis (catagen) and relative resting.

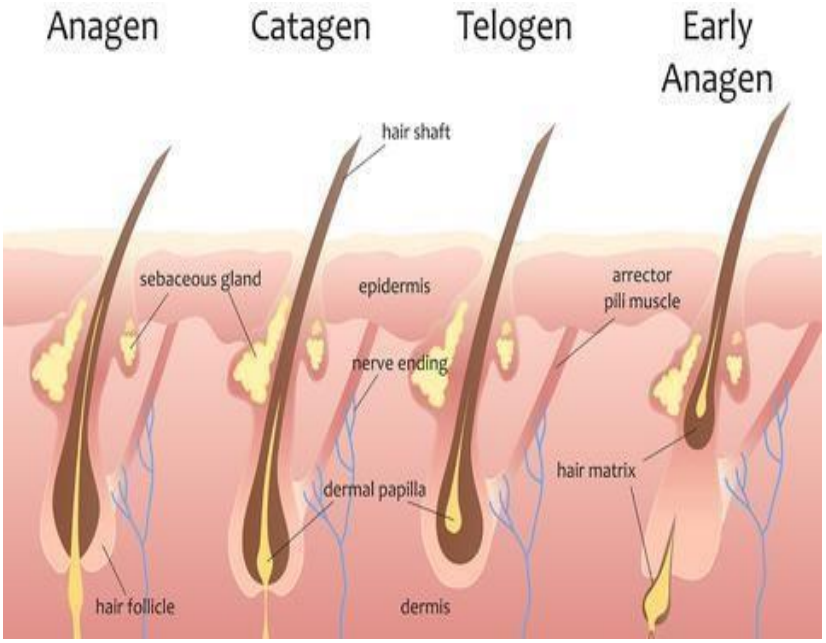

Figure 1: Normal Hair Growth.

2. MATERIAL AND METHOD

2.1 Material

Fenugreek seeds, *Mint leaves*, Aloevera gel, Glycerine, Coconut Oil, Almond Oil, Rose water, Citric Acid.

2.2 Method

2.2.1 Extraction of Fenugreek

- 4.2gm Fenugreek seeds and 4.2gm Mint leaves were measured by the digital weight machine.
- Then they were kept in a china dish and add 100ml of water to it. Boiled it until 1/4th of the liquid remain as in it.
- Aloe vera gel (3gm), citric acid (3gm) & glycerine (6ml) taken in another beaker and stir continuously to required solution get dissolved.
- This process is called aqueous phase. In another beaker almond oil (3ml) & coconut oil (3ml) mixed and stirred.
- Aqueous phase will be added drop by drop to plant extract and stirred continuously and to this solution

oil phase will be added drop by drop and continuously stirred.

- In this preparation, pinch of the methyl paraben is added as a preservative to the above solution
- The final solution will be measured in a measuring cylinder which results 40ml.
- To this solution 10ml rose water added to make up for 50ml. To increase the viscosity of the solution, this solution kept under mechanical stirrer for about 20 minutes

Phytochemical Screening (Feenugreek Seeds)

Medicinal flowers are traditional medication tools and lots of modern day drugs are circuitously derived from vegetation. Phytochemical ingredients are two major bioactive additives of the shape (chlorophyll, proteins, amino acids, sugar, and many others.) and feature secondary bioactive parts (alkaloids, terpenoids, phenols, flavonoids and so forth.). As in keeping with the standard approaches, phytochemical analyses have been done for all the extracts.

- **Detection of alkaloids:** Extracts were dissolved for my part in dilute Hydrochloric acid and filtered.

A) Mayer's Test: Filtrates is dealt with the reagent Mayer (Potassium Mercuric Iodide). The improvement of a yellow-colored precipitate suggests that alkaloids are gift.

B) Wagner's Test: With Wagner's reagent, filtrates is dealt with (Iodine in Potassium Iodide). The presence of alkaloids shows the production of brown/reddish precipitates.

C) Dragendroff's Test: Filtrates is dealt with with a reagent from Dragondroff's (answer of Potassium Bismuth Iodide). The crimson precipitate formation shows the presence of alkaloids.

- **Detection of carbohydrates:** The extracts had been in my view dissolved in 5 ml of purified water and filtered. The filtrates were used to check for carbohydrate presence.

D) Fehling's Test: With dil. HCl, filtrates is hydrolysed, neutralized with alkali and heated with A & B solutions from Fehling. The purple precipitate formation shows the presence of sugar reduction.

- **Detection of saponins**

A.) Froth Test: Extracts had been diluted to 20ml with purified water and this was shook for 15 mins in a graduated cylinder. The presence of saponins is tested by means of the formation of one cm of foam coating.

Formulation of Herbal hair Conditioner

The desired amount of the aqueous phase was added into the plant extract (Glycerin + Aloe vera Gel + Citric Acid) carefully. Desired quantity of coconut oil was added in desired amount of almond oil by gentle stirring. Then this mixture of oils also added into the plant extract. Rose water was finally mixed with previously prepared formulation and stirred gently by mechanical stirrer. Prepared formulations were filled in a suitable container and labeled accordingly.

Table no. 1: Formulation of Hair Conditioner.

S.No	Ingredients	Quantity	Use
1	Fenugreek Seeds	4.2 g	Nourishes the hair
2	Almond Oil	3ml	Smoothing Agent
3	Rose Water	5 ml	Perfume
4	Glycerine	6 ml	Moisturizer
5	Aloevera gel	3 ml	Conditioning Agent

Table no. 1: Evaluation of Hair Conditioner.

S.No	Name of Test	Result
1	**Alkaloids**	**+ve**
2	**Tannins**	**- ve**
3	**Saponins**	**- ve**
4	**Glycosides**	**+ve**
5	**Terpenoids**	**+ve**
6	**Flavonoids**	**+ve**

Fig. 2: Formulation of herbal hair conditioner.

Evaluation of Hair Conditioner

1. Cleaning action
2. Skin Irritation
3. Color:
4. Odor:
5. Texture
6. pH
7. Washability
8. Spreadability

S.No	Parameter	Observation
1	Cleaning action	Easily cleaning
2	Color	Yellow
3	Odor	Pleasant
4	Texture	Smooth
5	pH	5.5
6	Washability	Easily Washable
7	Spreadability	Easily spreadable
8	Skin Irritation	No Irritation

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