



## The Project On To Prepare And Evaluate The Herbal Hair Oil Using Trigonella Foenum Graceum Seeds.

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### 1. ABSTRACT :

Herbs and spices have been integral to human civilization, serving culinary, medicinal, religious, and economic purposes. They've revolutionized medicine and driven fortunes in cultivation, processing, and treatment. Found in various industries including food, medicine, perfumery, cosmetics, and gardening, they offer diverse benefits. "Cosmetic" comes from the Greek "kosmtikos," meaning beautification, inspiring herbal cosmetics, blending permissible components with herbs for defined benefits. These products provide nutrients while merging traditional and modern approaches for safety and efficacy. Ancient texts like the Charaka Samhitha advocate herbal hair oiling for scalp health and hair loss prevention, using oils like coconut, almond, and castor enriched with herbs. Coconut oil, with superior absorption and affordability, is a preferred base. Herbal cosmetics, with minimal adverse effects and accessible ingredients, are increasingly favored in hair care routines.

Fenugreek (*Trigonella foenum-graceum* L.) is a self-pollinating annual herbaceous aromatic leguminous crop, also known as bird's foot, Greek hayseed, and methi [1]. It is now widely cultivated in northern Africa, Europe, west and south Asia, north America, Argentina, and Australia [2]. Fenugreek is considered the oldest known medicinal plant in human history [3]. It was used for the treatment of diabetes and also has been utilized as a galactagogue.

**Keywords:** Fenugreek (*Trigonella foenum-graceum* L.), Herbs, Hair oil, Cosmetics, Evaluation parameters.

### LITERATURE SURVEY:

A literature survey on the formulation and evaluation of herbal hair oil would typically involve researching academic papers, journals, and other scholarly sources that discuss various aspects of formulating and evaluating herbal hair oils. Some key areas to explore might include:

**Herbal Ingredients:** Investigate different herbs and botanical extracts commonly used in herbal hair oils and their properties, such as promoting hair growth, reducing dandruff, or improving scalp health.

**Formulation Techniques:** Look into various formulation techniques used to prepare herbal hair oils, such as cold-pressing, maceration, or extraction methods like steam distillation.

**Evaluation Methods:** Explore methods for evaluating the efficacy and safety of herbal hair oils, including tests for hair growth stimulation, scalp irritation, microbial activity, and stability studies.

**Quality Control and Standardization:** Examine strategies for ensuring the quality and consistency of herbal hair oil products, including the standardization of herbal extracts and quality control measures.

**Clinical Studies:** Review any clinical studies or trials that have been conducted to assess the effectiveness of herbal hair oils in promoting hair health and treating common scalp conditions.

**Comparative Studies:** Look for comparative studies that compare the efficacy of herbal hair oils with conventional hair care products or treatments.

### INTRODUCTION :

Spices and herbs have been around for as long as people have. These plants have been used by humans from the beginning of time. Certain herbs can alter how our bodies function. They have transformed medicine, brought prosperity to those who cultivate, prepare, and use them, and in many cases, they have been given more social and religious weight than other plants in the garden and as ingredients in food, medicine, perfumery, and cosmetics.

The word "cosmetic" comes from the Greek "kosmtikos," which means "having the ability and skill to beautify." Herbal Cosmetics will be defined as botanomedicine, here understood as botanomedicine constructed utilizing a variety of approved cosmetic substances to form the appropriate base in which one or more herbal ingredients provide specific cosmetic advantages solely. Herbal or green personal care products are those made with herbs for their therapeutic and fragrant properties. Herbal cosmetics are safe, blend conventional methods with cutting-edge scientific techniques, and nourish the regions they are applied. The canonical text on Ayurvedic medicine, the Charaka Samhitha, stresses the need to oil the scalp and hair to preserve healthy hair and stop hair loss. The preparations for hair oil are included to treat split ends, dandruff, and other issues. Preparations for hair oil are primarily used to cool the scalp in order to promote luscious hair development in both men and women. A variety of oils, including castor, onion, coconut, and almond oils, are mixed with appropriate herbal medications and administered topically to the scalp. Because it absorbs into hair strands more effectively than

other oils and is more cost-effective than other oils, coconut oil is the most deserving oil base of them all. Thus, the recommended strategy for the finest hair development involves adding coconut oil to herbal medications. All that exists in hair care products are formulas meant to alter the texture of hair. Because the components used in herbal cosmetics are readily available and have fewer side effects, they are widely utilized.

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Fenugreek seed is a good source of essential amino acids, especially leucine, lysine, and total aromatic amino acids. Recently, researchers have found that the seed contains 20%–25% protein, 6%–8% oil, 45%–50% dietary fiber, and 2%–5% steroidal saponin. The seed is well characterized with a distinctive pungent scent that impacts flavor, color, and aroma of foods, making it highly desirable in culinary applications as a food spice in countries where it is grown. Advances in nutraceuticals and demand for functional foods have stimulated interest in fenugreek as a functional food. An increase in demand for food implies the need to increase the production of alternative sources of edible oils. Therefore, this study was focused on the fenugreek seed oil, which has many health benefits. Fenugreek seed oil (mainly of unsaturated acids, namely linoleic, linolenic, and oleic acid), is used in flavoring many canned foods and syrups and as an ingredient in some perfumes. Schuette et al. investigated the fenugreek seed oil obtained by Soxhlet extraction using petroleum ether as a solvent, and a yield of 6.7% was obtained. Ren et al. studied the optimal conditions for the extraction of oil from fenugreek seed by supercritical CO<sub>2</sub> fluids. The highest extraction yield under the optimum condition was found to be 8.95%. Arivalagan et al. determined the seed oil content in fenugreeks of different genotypes; the oil content ranged from 3.25% to 6.88% among 46 accessions of fenugreek genotypes. Savitha et al. studied the effect of grinding on the yield of fenugreek seed oil using Soxhlet extraction; the results implied that fractions less than 200 µm produced the highest oil yield of about 8%.

### AIM:

To promote the hair growth and smoothness of the hair. To supplement the hair with vital nutrients such as vitamins. To prevent the dandruff, split ends, and dull hair.

### OBJECTIVES :

- The Herbal hair oils are used to moisturize scalp and hair.
- The Herbal hair oils can prevent hair fall, fight dandruff, and promote hair growth.
- To Protect the scalp from sun and wind damage.
- To Stimulate hair growth.
- To Make hair shinier and softer.
- To Keeps the scalp hydrated.

### MATERIAL AND METHODS

All the materials used were of pharmaceutical or analytical grade.

**Table 1: List of Herbs Used.**

SR. No.	Name of the Herbs	Uses
1.	Coconut oil	Moisturizer stimulates hair growth unclogging pores.
2.	Hibiscus Flower	Thickening of hair.

3.	Fenugreek seed	Provides Smoothness.
4.	Curry leaves	Moisturizes the scalp.
5.	Black cumin seed	Arrests hair fall.
6.	Castor oil	Antimicrobial, antiviral, and promotes hair growth.

### ***ROLE OF INGREDIENTS IN HERBAL OIL***

#### ***COCONUT OIL***



Coconut oil may have several benefits for your hair and scalp. It may help hydrate and seal hair when used as a leave-in treatment and hair mask. This can help avoid split ends, hair breakage, and a dry, flaky scalp and dandruff. Coconut oil has the same glossy, smoothing effect on hair as other oils. Some apply a few drops to their dry hair as a shine serum. Coconut oil can be used in place of silicon-rich shine serums by those who prefer to stay away from silicones and related substances.

#### **HIBISCUS**



<b>Kingdom:</b>	Plantae
<b>Family:</b>	Malvaceae
<b>Subfamily:</b>	Malvoideae
<b>Order:</b>	Malvales
<b>Species:</b>	H. Rosa-sinensis
<b>Biological name:</b>	Hibiscus Rosasinensis

**FENUGREEK SEEDS**

<b>Kingdom:</b>	Plantae
<b>Family :</b>	Fabaceae
<b>Subfamily :</b>	Faboideae
<b>Genus :</b>	Trigonella Order Fabales
<b>Species :</b>	T. Foenum-graecum
<b>Biologicalname:</b>	TrigonellaFoenum graceum
<b>Othernames:</b>	Fenugreek seed

**CURRY LEAVES:**

<b>Kingdom:</b>	Plantae
<b>Family: Genus:</b>	Rutaceae
<b>Order:</b>	Murraya
<b>Species:</b>	sapindales M. Koenigii
<b>Biological name:</b>	MurrayaKoenigii
<b>Other names:</b>	karivepallai, karivepaku,

**BLACK CUMIN**

<b>Kingdom:</b>	Plantae tracheophytes
<b>Clade: Family:</b>	Ranunculaceae Nigella
<b>Genus: Order:</b>	Ranunculates
<b>Species:</b>	N. sativa
<b>Biological name:</b>	Nigella sativa L

**CASTOR OIL**

**Kingdom: Clade:** Plantae Angiosperms  
**Order: Family:** Malpighiales  
**Subfamily:** Euphorbiaceae  
**Genus:** Acalyphoideae Ricinus  
**Species:** L.  
 R.communis

**Binomial name:** Ricinus communis L.

**METHODOLOGY**

- ✓ The herbs used in the present study for making herbal hair oil were dried, crushed, and passed in sieves and it was used in coconut oil base.



- ✓ First is a direct boiling method in which crude drugs are powdered and directly boiled in Coconut oil with continuous stirring and heated until the drug completely gets extracted into the oil base.

**Formulation:**

**Table 2: Ingredients of formulation**

Sr.no	Ingredients	Quantity (gm)
1	Fenugreek Seeds	10
2	Hibiscus	10
3	Curry Leaves	08

4	Black Cumin	10
5	Castor Oil	20
6	Coconut Oil	40

### Procedure For Formulation of Herbal Oil

- Different ingredients used in the formulation of herbal hair oil are presented in the table.
- All the dried herbs such as fenugreek seed, black cumin, curry leaves, hibiscus, and tulsi were weighed and grind in a mixer and mixed with coconut oil.



Fig. 1



Fig. 2



Fig. 3

- Now the contents were boiled for 15 minutes and filtered through a muslin cloth. To the filtrate coconut oil and castor oil are added to make up the volume (100ml).



Fig. 4



Fig. 5

### EVALUATION PARAMETERS

Evaluation test for hair oils Prepared herbal hair oil was estimated for product performance which includes physicochemical parameters.

#### 1. Organoleptic Property

- Color: Detected by the naked eye.
- Sensitivity: Applied to the skin and exposed to the sunlight for 5 minutes to check for any irritation over the skin.
- Grittiness: Rubbed to the skin and observed.
- Sedimentation: Keep the whole preparation aside overnight and check for sedimentation.

## 2. pH Determination

pH of the herbal oil was detected using a pH meter.



Fig. 6

## 3. Viscosity Measurement

The viscosity of prepared herbal hair oil was estimated by Ostwald's Viscometer at room temperature. The viscosity of prepared herbal hair oil was calculated by using the equation,



Fig. 7

$$\text{VISCOSITY OF OIL } (\eta_2) = (P_2 * T_2 / P_1 * T_1) * \eta_1$$

$\eta_1$  = Viscosity of water

$P_2$  = Density of sample

$t_2$  = Mean time of oil from A to BP1

$P_1$  = Density of oil

$t_1$  = Mean time of flow of water from A to B

$$\text{Viscosity of Oil } \eta_2 = (0.852 * 21.48 / 0.997 * 25.99) * 0.997$$

$$\text{Viscosity (Oil) } \eta_2 = 0.9240 \text{ CP}$$

## 4. Specific Gravity

Take the specific gravity bottle rinse it with distilled water dry it in the oven for 15 min, cool, close it with a cap, and weigh it(a). Now fill the same specific gravity bottle with the sample and close it with a cap and again it weighs (b). Determine the weight of the sample per milliliter by subtracting the weight (a-b).

**Calculation –**

(w1) weight of empty bottle = 16.48

(w2) weight of specific gravity bottle + distill water =44.14(w3) weight of oil =41.55

- Mass of liquid sample =  $W3 - W1$   
 $= 41.55 - 16.48 = 25.07$

- Mass of distilled water=  $W2 - W1$   
 $= 44.14 - 16.48 = 27.66$

The specific gravity of liquid = Mass of liquid/Mass of equal volume of water

$$= 25.07/27.66$$

$$= 0.906$$

**5. Stability Study**

It is performed by keeping the prepared herbal hair oil in a closed container in a cooled and dry place.

**6. Determination of acid value**

Acid value =  $5.61V N / W$  Where, V = Volume of standard sodium hydroxide used (ml); N = Normality of the sodium hydroxide solution; W = Weight of the sample (g).

**7. Determination of peroxide value**

Peroxide value =  $10(a-b) / w$  Where, a = ml of NaOH required to neutralize the substance, b = ml of NaOH required for blank, w = weight of sample in (g).

**8. Determination of saponification value**

Saponification value =  $28.05(B-S) W$  Where, S = ml of KOH required to neutralize the substance; B= ml of KOH required for blank; and; W = Weight of the sample taken for the test (g).

**RESULT :**

Many hair-related issues can be resolved with fenugreek hair oil. The oil was made from a variety of herbs. Each of the herbs used in the composition, such as those with antidandruff, antibacterial, and hair growth stimulating qualities, aids in hair regeneration and delays the onset of graying. In addition to providing the many vital nutrients needed to sustain the sebaceous gland's regular operation and encourage natural hair growth, the herbal hair oil hydrates the scalp.

**Table 3: Physical evaluation of herbal hair oil**

Parameters	Result
Color	Dark brownish
odour	characteristic
Grittiness	smooth
pH	8.19
Viscosity at 25°C	0.9240 CP



Specific gravity	0.906
Skin irritation	No irritation



## DISCUSSION :

One of the most well-known hair treatments is herbal hair oil, which has drawn some interest from the general public. Herbal hair oil treats dry hair and scalp issues while also hydrating the scalp. It encourages the growth of natural hair and offers a variety of vital nutrients needed to keep sebaceous glands operating normally. It is essential to oil your hair at least twice a week, preferably the night before you intend to rinse it. Frequent oiling may protect hair from pollutants, chemicals, and ingredients in shampoo; it may also improve moisture, luster, and shine while perhaps halting hair loss. Lauric acid is the main fatty acid found in coconut oil. Because of its strong affinity for hair protein, it can readily enter the hair shaft and bind to the protein. It is therefore among the greatest oils for minimizing protein loss from both healthy and damaged hair. Fenugreek seeds fortify your hair from root to tip and treat hair loss. Its high protein content eventually aids in the battle against baldness. It is a well-known source of lecithin, which stimulates hair follicles and promotes hair growth. Curry leaves thrive on antioxidants that hydrate the scalp and eliminate dead hair follicles; the protein and beta-carotene in curry leaves also function as tools to stop hair loss and thinning hair. Because black cumin seed oil is a hair growth stimulator and is rich in fatty amino acids and antioxidants, it may help seal the moisture in individual hair shafts. Coconut oil and black seed oil together were effective enough to promote hair growth. With its powerful aroma, camphor treats dandruff and irritated scalps while also destroying lice. It is a home cure to enhance your hair texture and postpone graying hair.

## CONCLUSION :

As natural medicines are thought to be safer and have fewer adverse effects than synthetic ones, they are more widely accepted. The demand for herbal formulations is rising on the global market. Hair oil plays a significant role in medicine for the treatment of hair-related issues. The different components of herbal extract may aid in both hair development and reduction of hair loss. In addition to their exceptional efficacy, none of these medications have any possible negative effects as compared to synthetic medications. The tulsi leaves that are used give it an antidandruff hair tonic effect. Hibiscus promotes healthy hair development by softening hair. Curry leaves and black cumin are other key components. Curry leaves help heal damaged hair and lessen hair loss, while black cumin keeps hair from going gray. An assessment test was used to gauge the made herbal hair oil, and the findings were satisfactory. The formulation of herbal hair oil was shown to have good hair-nourishing qualities.

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