ABSTRACT

The area of pharmacy that deals with herbs are called pharmacognosy. Numerous medicines are prepared and created using these medicinal plants. In addition, herbs are used as a flavoring and coloring agent, as well as to make cosmetics and beautify the body. The preparation and assessment of herbal hair oil using fresh components from various plants is the primary goal of the current study. The prepared herbal hair oil underwent testing for phytochemicals, general characterization, physical properties, and chemicals. The Indian Pharmacopoeia was followed in the preparation of the herbal oil. Herbs including Coconut Oil, Castor Oil, Fenugreek Seed, Kalonji Seed, Onion, Hibiscus Flower Powder, Curry Leaves, and Camphor are included in the composition. The formulation of herbal hair oil was evaluated using a variety of criteria, including organoleptic characteristics, viscosity, pH, acidity, saponification, refractive index, and specific gravity. On the forearm, it is also examined for cutaneous sensitivity. It is also evaluated for stability research. Above all the parameters were studied and found that all are within acceptable limits. In conclusion, the prepared herbal hair oil is utilized to promote hair growth, for supplementation of vitamins and minerals, to prevent dandruff, split ends, and choice from hazardous chemicals.

KEYWORDS: Hair, Herbal oil, Stability studies, cosmetics, evaluation, pH.

1. INTRODUCTION

Natural oil products known as herbal hair oils have important qualities that can be used to cure hair issues like hair thinning and dry or flaky scalp. These oils give volume to the hair shaft, promote hair development, and enhance blood flow to the scalp in addition to hydrating the skin. Hair oil is a cosmetic item with an oil component that aims to improve hair
quality. Products containing hair oils may contain a variety of oils. These frequently claim to help with hair damage, dryness, or growth.\textsuperscript{[8]}

The research of medical medications made from plants or other natural sources is called pharmacognosy. It focuses on natural substances that have therapeutic properties. Drugs from a plant, animal, or mineral sources may be used in Indian medical systems in their natural or so-called "Crude" forms, either separately or in combination to produce compound formulations. Ayurveda and pharmacognosy are closely related because they both deal with medicinal herbs. The terms ayur, meaning leads to life, and Veda, which means sacred knowledge or science, combine to produce the Sanskrit word for "Ayurveda." Ayurveda is the science of life as a result. Herbs are an essential component of the healthcare system in ayurvedic medicine. Many Ayurvedic plant items have been replaced by synthetic chemical compounds since natural products' safety and efficacy could not be matched. Medicinal herbs derived from plants are thought to be much safer when treating a variety of disorders. Additionally, it is used in the formulation of products for the food, textile, and cosmetics sectors. A protein filament known as hair grows from dermal follicles. One of what distinguishes animals is their hair. The most popular areas of interest in hair include hair types, hair growth, and hair care, but hair is also a significant biomaterial that is mostly made of proteins, particularly alpha keratin. The most common cosmetics-related issues include dandruff, hair loss, dryness, split ends, frizz, dullness, heat damage, color damage, grey hair, etc. There are a variety of products on the market to help with these issues, including hair oils, shampoos, conditioners, serums, gels, masks, and hair colors. Hair oils are cosmetic products that are used on the hair to encourage luscious hair growth, balding therapy, and hair aggression. As a hair tonic, hair oil containing herbal medications is utilized. Products for hair care are categorized.

Oil Types.
A range of modern and conventional hair oils are made from mineral and vegetable oils. A frequent ingredient is coconut oil. Almond, argan, babassu, burdock, Castor, and tea seed are additional vegetable sources.

On the scalp, natural oils are more frequently employed as cosmetics. Natural oils are derived from sources that are incredibly rich in vitamins and fatty acids.
- **Coconut oil.**
  When used both before and after washing, coconut oil has qualities that minimize protein loss in hair. Lauric acid, a fatty acid with low molecular weight and linear shape that may penetrate the hair shaft, is a recognized component of coconut oil.

- **Argan oil.**
  Moroccan-born argan oil is known for its conditioning abilities, which leave hair smooth and reduce frizz.

- **Avocado oil.**
  Avocado oil is nutrient-rich. It includes a lot of vitamin E, an antioxidant that may help stop hair loss and improve hair.

- **Other oil.**
  Oils like olive oil, jojoba oil, grapeseed oil, and almond oil may increase hair elasticity and protect from dryness and damage.

**Advantages**
1. For quality Hair.
2. For dandruff removal.
3. For head pain and good sleep.
4. Stimulation of Hair Growth.
5. Prevents Premature Greying.

**AIM**
The main aim of our project is to formulate and evaluate herbal hair oil.

**OBJECTIVES**
- To enhance hair smoothness and growth, which are essential for hair attraction and beauty.
- To add essential nutrients to the hair, like vitamins and minerals.
- To prevent pollution-related hair loss and damage.
- To Prevent split ends, dull hair, and dandruff.
- To provide a safer source than dangerous chemicals.
2. Experimental Section

2.1 Plants Materials

The plants selected for the preparation of herbal hair oil are

- **Seed of Nigella sativa**

**Definition:** The annual flowering plant Nigella sativa, also referred to as black caraway, nigella, or kalonji, is a member of the Ranunculaceae family and is native to Eastern Europe (Bulgaria and Romania) and Western Asia (Cyprus, Turkey, Iran, and Iraq). However, it has naturalized over a much wider area, including parts of Europe, Northern Africa, and even as far east as Myanmar.[1]

**Synonyms**


- **Fenugreek seed**

**Definition:** Trigonella foenum-graecum, an annual plant in the Fabaceae family, has three tiny, obovate to oblong leaflets on each of its leaves. It is grown as a semiarid crop all over the world. Its seeds and leaves have been utilized in cooking since the dawn of humanity and are frequently seen in cuisines from the Indian subcontinent. It is safe to use as a culinary ingredient in tiny amounts.[2]

**Binomial name**

Trigonella foenum-graecum
- **Hibiscus**

**Definition**

The Malvaceae family of flowering plants includes the genus Hibiscus. Several hundred species that are indigenous to warm-temperate, subtropical, and tropical climates around the world make up the genus, which is quite vast. The member species, often known as "hibiscus" or, less frequently, "rose mallow," is renowned for having enormous, spectacular flowers. Hardy hibiscus, rose of Sharon, and tropical hibiscus some of its other names. [3]

**Synonyms**

Bombycidendron Zoll. & Moritzi Bombycodendron Hassk.

Brockmania W.Fitzg.

Pariti Adans.

Wilhelminia Hochr.

- **Curry Tree**

**Definition**

The curry tree, also known as Murraya koenigii or Bergera koenigii, is a tropical to the subtropical tree that is indigenous to Asia. It belongs to the Rutaceae family, which also contains rue, citrus, and satinwood. Although M. koenigii belongs to a different family than neem, Azadirachta indica, which is in the adjacent family Meliaceae, the plant is nevertheless
occasionally referred to as sweet neem despite t.

**Synonyms**
Bergera koenigii L.
Camunium koenigii (L.) Kuntze

- **Coconut oil**[^4]

**Definition**
The meat, milk, and wick of the coconut palm fruit are used to make coconut oil, also known as coconut butter. In warmer climates throughout the summer, coconut oil transforms into a transparent, thin liquid at room temperatures of roughly 25 °C (78 °F). Coconut oil is white solid fat that melts at these temperatures. The unrefined varieties smell strongly like coconut. It is employed in the manufacture of cosmetics and detergents as well as for use as a food oil. Numerous health organizations advise restricting its usage as a food due to its high levels of saturated fat.[^4]

- **Castor Oil**[^5]

**Definition**
Castor beans are used to squeeze castor oil, a type of vegetable oil. It has distinct flavors and smells and is a colorless or pale yellow liquid. Its density is 0.961 g/cm³, and its boiling point is 313 °C (595 °F). It consists of a combination of triglycerides with ricinoleates making up...
roughly 90% of the fatty acids. The other important ingredients are oleic acid and linoleic acid.

Camphor[6]

Definition
A waxy, combustible, translucent material with a potent scent, camphor. It has the chemical formula C10H16O and is a terpenoid. It can be found in the wood of the related Kapur tree (Dryobalanops sp.), a tall timber tree from South East Asia, and the camphor laurel (Cinnamomum camphora), a huge evergreen tree found in East Asia. Additionally, it can be found in several other closely related laurel trees, most notably Ocotea usambarensis. Camphor is found in rosemary leaves (Rosmarinus officinalis) in amounts of 0.05 to 0.5 percent and camphor weed (Heterotheca) in amounts of up to 5 percent.

Camphor basil is a significant source of camphor throughout Asia (the parent of African blue basil). Additionally, synthetic camphor can be made from the oil of turpentine.[13]

Allium cepa (onion)

The vegetable Allium cepa usually referred to as the bulb onion or common onion, is the most frequently grown species of the Allium genus and a member of the Amaryllidaceae family. The bulbs are the part that is used, and they have some therapeutic components like sulfur for hair development and fructan, which has diuretic properties. Additionally, it has
flavonoids with anti-inflammatory effects and potassium salts. Additionally, onions exhibit cardio-circulatory system activity as a small vessel protector, lowers blood cholesterol and prevents thrombosis.

1. MATERIALS AND METHODS

To make the herbal hair oil, a variety of plant ingredients were gathered and used. These include curry leaves, hibiscus powder, camphor powder, onion, kalonji seed, and fenugreek seed. Each one was gathered from an agricultural field. My project supervisor, Miss Harshada Ishi, identified the plants that I had collected.

The oils used for herbal hair oils were Coconut oil and castor oil. All Materials were purchased by dagger teli from Nashik. All the collected oils were identified by the project guide.

Formula

<table>
<thead>
<tr>
<th>Sr.no</th>
<th>Ingredients</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Coconut oil</td>
<td>20ml</td>
</tr>
<tr>
<td>2</td>
<td>Castor oil</td>
<td>18ml</td>
</tr>
<tr>
<td>3</td>
<td>Kalonji seed</td>
<td>3gm</td>
</tr>
<tr>
<td>4</td>
<td>Fenugreek seed</td>
<td>3gm</td>
</tr>
<tr>
<td>5</td>
<td>Hibiscus powder</td>
<td>2gm</td>
</tr>
<tr>
<td>6</td>
<td>Camphor powder</td>
<td>3gm</td>
</tr>
<tr>
<td>7</td>
<td>Onion</td>
<td>0.5gm</td>
</tr>
<tr>
<td>8</td>
<td>Curry leaves</td>
<td>0.5gm</td>
</tr>
</tbody>
</table>

3. Procedure

The various ingredients used in the formulation of herbal oil are presented in Table 4. Accurately weigh all the dried and fresh herbs such as Fenugreek seed, Kalonji Seed, castor oil, coconut oil, Hibiscus powder, Curry Leaves, Onion, Camphor, and Triturate Fenugreek seed, Kalonji seed, Camphor, Hibiscus in mortar pester. Heat the Castor and Coconut oil for 2 min and mix the above powder, Curry leaves, and onion in the oil and heat for 20 min. Now filter it by using filter paper or muslin cloth. To the filtrate, coconut oil was added to make up the volume (50 mL).

Methods used in preparation

1. Purification & Drying

Purification: Purification is the process of removing pure elements from impure materials. Drying: The removal of water or another solvent by evaporation from a solid, semi-solid, or
liquid is the mass transfer process known as drying. Before selling or packaging products, this procedure is frequently employed as the last production stage.

2. Trituration: The term "trituration" refers to a variety of techniques used to prepare materials. It resembles comminution in some ways (reducing the particle size of a substance). In a different sense, it is the process of completely blending and grinding component ingredients to create a uniform powdered materia.

3. Heating: It is the procedure of heating the chemical to allow uniform mixing.

4. Filtration: the technique of removing solid particles from a liquid or gaseous fluid by passing the fluid through a filter media made of filter paper or muslin cloth while retaining the solid particles.

**Evaluation of Formulated herbal hair oil**

1. Determination pH of Herbal hair oil: A pH meter or pH paper was used to calculate the pH of the herbal hair oil.

2. Determination viscosity of herbal hair oil: By using an Ostwald viscometer, the viscosity of herbal hair oil was measured. Ostwald's viscometer was used to measure the viscosity.[7]

3. Determination Specific gravity of herbal hair oil: Take the bottle with the specific gravity, rinse it in distilled water, dry it in the oven for 15 minutes, let it cool, cap it, and weigh it (a). Next, add the sample to the same specific gravity bottle, shut it, and weigh it once more (b). Subtract the weight to obtain the sample weight per milliliter (b-a).

4. Determination Sensitivity test of herbal hair oil: On a hand's 1 cm of skin, the herbal hair oil formulation was applied, and it was left in the sun for 4-5 minutes.[7]

5. Determination of irritation test: Create a space on the hand's surface. After applying the oil to the specified area, the time was recorded. irritation was checked.[7]

**5. RESULTS AND DISCUSSION**

One of the most well-known hair treatments is herbal hair oil. Herbal hair oils not only hydrate the scalp, but they help repair dry scalp and hair. It offers a variety of vital nutrients needed to support the sebaceous glands' regular operation and encourages the growth of healthy hair. The aforementioned materials were used to make the herbal hair oil, which was then put through a qualitative chemical analysis to identify the different plant contents. The various characteristics of the herbal hair oil, including colour, odor, specific gravity (density), pH, viscosity, sensitivity test, and irritant test, were assessed.
The zone of inhibition of herbal hair oil was measured to determine its anti-dandruff effectiveness. Hair oil demonstrated positive results.

**Physical Evaluation of Herbal Hair Oil**

<table>
<thead>
<tr>
<th>Parameters</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nature</td>
<td>Oil</td>
</tr>
<tr>
<td>Colour</td>
<td>Light yellow</td>
</tr>
<tr>
<td>Odour</td>
<td>Pleasant</td>
</tr>
<tr>
<td>pH</td>
<td>6.5 to 6.8</td>
</tr>
<tr>
<td>Viscosity</td>
<td>0.93 cp</td>
</tr>
<tr>
<td>Irritation test</td>
<td>Nil</td>
</tr>
<tr>
<td>Specific gravity</td>
<td>1.096</td>
</tr>
</tbody>
</table>

**6. CONCLUSION**

One of the most well-known hair treatments is herbal hair oil. Herbal hair oils not only hydrate the scalp, but they help repair dry scalp and hair. It offers a variety of vital nutrients needed to support the sebaceous glands' regular operation and encourages the growth of healthy hair. The value of the numerous herbs used in the preparation of the herbal hair oil is discussed. The various characteristics of the herbal hair oil, including sensitivity test, viscosity, pH, irritant test, and specific gravity, were assessed. The formulated herbal hair oil was therefore found to have optimal standards from the current investigation, and additional standardization and biological screening establish the efficacy of the formulated herbal hair oil.

**REFERENCES**

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