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Formulation and Evaluation of Herbal Hair Oil

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Abstract: ***Nowadays, many shampoos, conditioners, and hair tonics are made using herbal extracts. These herbal hair products are very popular because they are more natural and have fewer side effects than chemical ones. The main aim of this study is to make a herbal hair oil using natural ingredients like curry leaves, rose petals, hibiscus, rosemary, methi (fenugreek), coconut oil, and almond Oil. After preparing the oil, different tests were done to check its pH, thickness (viscosity), and saponification value. The herbal oil was made by boiling all the ingredients together. Herbal oils are useful for many hair problems. Out of all the samples, the F1 oil gave the best results. This oil helps to reduce hair fall, remove dandruff, improve blood flow to the scalp, stop early hair graying, and fight fungal infections.***

Keyword: Herbs and Hair care Formulation, preparation and Evaluation.

I. INTRODUCTION

Hair one plays a crucial role in our bodies as a protective barrier and a key element of our appearance.
It is a complex structure with three main parts:

- Bulb: As well in gat the base located in the dermis.
- Root: The portion of hair below the skin surface.
- Shaft: The visible part of hair protruding above the skin. A Cross-section of a Hair

Follicle Hair growth happens in three phases:

- Anagen: The active growth phase.
- Catagen: The transitional phase.
- Telogen: The resting phase, after which the hair sheds.

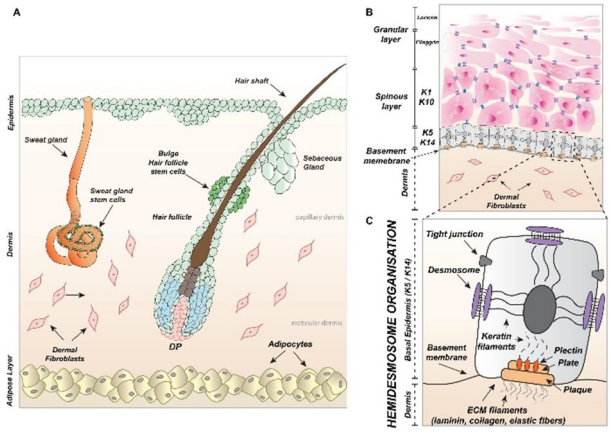


FIG. HAIR GROWTH

Hair loss is a common concern form any individuals, and there is a constant search for natural remedies to promote healthy hair growth. The demand for herbal-based cosmetics has been steadily increasing due to their perceived benefit sand natural properties. Adding herbs to cosmetic products is considered a safer alternative for the skin compared to synthetic ingredients. Various Herbal Ingredients commonly used in Cosmetics One type of herbal cosmetic gaining popularity is hair oil.It not only moisturizes the scalp but also helps to revive dry scalp and hail .It also provides essential nutrients vital for maintaining healthy sebaceous glands and promoting natural hair growth.

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Hair is made up from strong structural protein named as kerotin .It almost present on all surfaces of human skin except the palms, lips, soles, and certain genital parts .The growth of hair is same to skin cells .Mainly Each hair grows in three cyclic phases, which are the, antigen, cartage and telegenic .The first antigen phase can be as short as 2-6 years of time period .In the cartage phase ,the activity of growth increases and hair moves to the next phase ,and second phase the cartage phase is between 2-3 weeks .The last Telegenic phase is a state at which the hairs move into the resting state .This phase lasts for about 2-3months.

II. THREEGLANDS

1) Epidermis
2) Dermis
3) Oil gland

A. Function of hair Follicle

- To promote growth of hair
- Help to repair skin after the wound or an injury.
- Forms the new blood vessels.
- Form new neuron cells of nervous system.

B. Problems Related to Hair

- Dry hair
- Split ends
- Oily hair
- Frizzy hair
- Limp hair
- Hair loss
- Heat damage
- Color damage

C. Benefits of Herbal Hair Oil

- The hair oil helps prevent hair loss and reduces frizz. The ends of the human hair need special care, and vegetable oil help to pampers the throughout the diet.
- Gives shine to hair.
- It helps to relieve stress.
- Regular use of hair oils helps to cure the problem of premature grey hair.
- It gives natural beauty to the hair. The Vegetable oil contains vitamins as well as minerals nutrients that act as hair nourishment.
- Helps to keep scalp moist.
- Help improves hair growth.
- It prevents dandruff.
- Help for longer and stronger hair
- Help to maintain the color of hair
- Maintain the hair health.

D. Ideal characteristics of Hair oil

- It must impart pleasant smell to the hair.
- It should not have any side effects.
- It must be fluently removed on irrigating with the water.
- It should give luster to the hair.
- It should be retain them soft and flowing
- It should Keep the brain cool.
- Should not be sticky.

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E. Disadvantage of Hair Oils

- The use of so much oil can weigh down the hair and damage the scalp
- People can make oil which can damage the any individuals scalp. If person have a sensitive scalp, he should not use herbal hair oil when you are in good strength as this will only causes scalp issues and if your hair is oily, it will cause excessive oiliness.
- Hair oil can also cause seborrheic dermatitis or dandruff.

F. Various Herbal Oils Available in the Market

- Bhringraj hair oil
- Brahmi Hair Oil
- Cantharidin hair oil
- jasmine hair oil
- Onion hair oil
- Coconut Hair oil

III. INGRIDIENTS

A. Amla

Amla, also known as Indian gooseberry, is a rich source of vitamin C, an anti-oxidant that helps protect their from damage and promotes hair growth. It also contains tannins, which can strengthen hair follicles and prevent hair loss.

- Botanical name- Phyllanthus Emblica
- Kingdom –Plantae
- Order – Malpighiale
- Family-Euphorbiaceous
- Genus- Phyllanthus
- Species-P. Emblica



FIG. Amla

B. Almond Oil

Almond oil is a good source of vitamin E, another antioxidant that nourishes hair and prevents dryness and breakage. It also contains fatty acids that help moisturize the scalp and promote healthy hair growth.

- Botanical Name – Prunus amygdalus
- Kingdom-Plantae
- Order -Rosales
- Family– Rosaceae
- Genus-Purnus
- Species - P. amygdalus
- Chemical **constituents** -Fixed oil, proteins, olein



FIG. Almond Oil

C. Pumpkin Seeds

Pumpkin seeds are a good source of zinc, magnesium, and iron which are all essential nutrients for healthy hair growth.
They also contain antioxidants that can help protect hair.

- Botanical Name–Cucurbita pepo
- Order–Apiales
- Family–Apiaceous
- Genus– Daucus
- Kingdom–Plantae
- Chemical constituent–vitamin, phenolic,
- Flavonoid, fatty acid, amino acids



FIG .Pumpkin Seed

D. Till oil

Till oil, also known as sesame oil,
Is a traditional hair oil with anti-inflammatory and antibacterial properties.It can help soothe an irritated scalp, reduce dandruff, and promote hair growth.

- Botanical Name: Sesames indicium
- Kingdom: Plantea
- Order: Apilease
- Genus: Sesamum
- Chemical Constituent: Carbohydrate, Phenolic
  Flavonoids, tocopherols, hysterias



FIG. Till Oil

E. Moringa Leaves

Moringa leaves are a rich source of vitamins, minerals, and antioxidants, which can help nourish and protect hair. They also contain antibacterial and antifungal properties, which can help prevent scalp problems like dandruff.

- Botanical Name: Moring Oleifera
- Family: Moringaceae
- Kingdom: Plantae
- Order: Capparales
- Genus: Moringa
- Chemical constituent: Amino acid, Essential oil, Saponins, Glucosinolates



FIG. Moringa Leaves

F. Fenugreek Seeds

Fenugreek seeds are a rich source of protein and vitamins, which can help nourish and strengthen hair. They also contain mucilage, a substance that can help moisturize the hair and scalp.

- Botanical name: Trigonella foenum-graecumL.
- Kingdom: Plantae
- Order: Fables
- Family: Fabaceae
- Genus-Trigonella
- Chemical constituents: Proteins, Lipids, Alkaloids



FIG. Fenugreek

G. Hibiscus

Hibiscus flowers are a rich source of vitamins and antioxidants, which can help nourish and protect hair.

- Botanical name: Hibiscus rosa-sinensis
- Kingdom: Plantae
- Order: Malvales
- Family: Malvaceae
- Genus: Hibiscus-L.
- Chemical constituents: Polyphenols, Steroids, Amino acids, Lipids



FIG. Hibiscus

H. Shankapuspi

Shankapuspi is an herb with

Anti-inflammatory and anti-stress properties. It may help reduce scalp inflammation and prevent hair loss associated with stress.

- Botanical Name: Convolvulus pluricaulis
- Kingdom: Plantae
- Order: Solanales
- Family: convolvulaceace
- Genus: convolvulus
- Chemical constituent: Convolamine, cerylalcohol,

B-sitosterol, shankhapushpine, convosine, convoline



FIG. SHANKAPUSPI

I. Garlic

Garlic has anti-inflammatory and antibacterial properties, which can help Soothe an irritated scalp and prevent scalp infections. It may also help promote hair growth.

- Botanical Name: Alumsativum
- Kingdom: Plantea
- Order: Asparagales
- Family: Amaryllidaceae
- Genus: Allium
- Chemical constituent: Allin, Allicin, E-Ajoene, Allymercaptan, Z-Adjoined����.



FIG. Garlic

J. Castor oil

Castor oil is a thick, viscous oil with anti-inflammatory and antibacterial properties. It can help moisturize the scalp and promote hair growth.

- Botanical name: Ricinus commumisL.
- Kingdom: Plantae
- Order: Malpighiales
- Family: Euphorbiaceous
- Genus: Ricinus
- Chemical constituents: Ricinileic acid, glycerol



FIG. Castor Oil

K. Curry Leaves

Curry leaves have anti-inflammatory

And antioxidant properties, which can help soothean irritated scalp and protect hair from damage. They may also help promote hair growth.

- Botanical name: Murraya koenigii
- Kingdom: Plantae
- Order: Sapindales
- Family: Rutacea
- Genus: Murraya
- Species: M. koenigii
- Chemical Constituent: Thujene, Jasmin



FIG. Curry Leaves

L. Coconut Oil

Coconut oil is a popular hair oil that is known for its moisturizing properties. It can help penetrate the hair.

- Botanical name: Cocosnucifera
- Kingdom: Plantae
- Order: Arecales
- Family: Arecaceae
- Genus: Cocos
- Chemical Constituents-Glucose, amino acid, electrolytes, calcium

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FIG. Coconut Oil

M. Flavoring Agent

The addition of a flavoring agent can help make the hair oil more pleasant to use.

So overall this polyherbal hair oil has the potential to provide a range of benefits for hair care.

Including

- Promoting hair growth
- Preventing hair loss
- Nourishing and strengthening hair
- Moisturizing the scalp and hair soothing an irritated sclap
- Reducing dandruff

IV. FORMULATION OF HERBAL HAIR OIL:

Accurate weigh all of the fresh and dried herbs leaf powder precisely. Equally combine coconut oil till, almond oil, curry leaves, fenugreek seeds, moringa leaves, garlic, cloves, pumpkin seeds, betal leaves, castor oil, hibiscous, kalonji seeds, amla, shankapuspi, boil until the curry leaves get a deep brown colour.

TABLE NO.1

S.NO	INGREDIENTS	QUANTITY (%)
1	Amla	1%
2	Almond Oil	2%
3	Till Oil	15%
4	Fenugreek seed	2%
5	Moring leaves	4%
6	Pumpkin seed	2%
7	Hibiscus	1%
8	Shankapuspi	1%
9	Garlic	4%
10	Castor oil	2%
11	Curry leaves	1%
12	Coconut oil	60%
13	Flavoring agent	q.s.

A. Procedure

1) Take Accurately weighed all the dried and fresh herbs and leaves.
2) Mix required quantities of Coconut oil, Castor oil, and the Almond oil as mentioned in the above tables.
3) Then add dried alma, methi seeds, curry leaves, hibiscus, to the oil mixture.
4) Then boil this, mixture upto 30 minutes under low flame.
5) After that the whole preparation was filtered using the muslin cloth.
6) Add lavender oil for the Fragrance purpose.

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V. EVALUATION OF HERBAL HAIR OIL

A. Physical Appearance

The general characteristics like colour and odour were evaluated manual

B. Acid Value

10ml of oil was added with 25ml of ethanol and 25ml of ether. Phenolphthalein was added as an indicator and titrated with 0.1M potassium hydroxide solution,11 Acid value=5.61n/w Where,
n=Numberofmlof0.1MKOH
w=Weight of oil

C. Saponification Value

In a 250Ml conical flask,1Ml of oil was accurately weighed, and10Ml of ethanol: ether combination (2:1) was added. 25Ml of 0.5N alcoholic KOH was added to this flask. The flask was kept for 30 minutes and then cooled. Using a phenolphthalein indicator, the cooled solution was titrated against 0.5N HCL. The blank titration was carried out in the same way but without using any oil(sample). The amount of KOH used in mg was calculated.
Saponification Value:28.05(b-a)/w Where,
w=weight in grams of the solution

D. Ascorbic Acid Test

Added 1 drop of freshly prepared 5 percent w/v sodium nitroprusside solution and 2ml of dilute sodium hydroxide solution to 1ml of 2 percent w/v solution and 5ml of water. Drop in 0.6ml of hydrochloric acid, mix, and records found.

E. Sulphur Test

On the test paper, a drop of hydrogen peroxide was placed.
When exposed to fumes, the paper becomes brown.

F. Saponin Test

The formation of stable froth was observed by shaking oil and water in a test tube.

G. Specification Gravity

A specification gravity bottle was taken, rinsed with distilled water, dried in the oven for 15 minutes, cooled, and then weighed(a). Herbal hair oil was filled in the same specification gravity bottle, closed, and weighed again(b). Subtracted the weight (b-a) from the weight of the sample per milliliter.

H. Primary Skin Irritation Test

A basic skin irritation test was performed on the skin with a small amount of the produced herbal viscosity of prepared hair oil is determined at room temperature.

I. Grittiness

Oil is rubbed on skin and observed.
pH determination:
Take a pH paper and deep the paper in the prepared hair oil

TABLE NO.2

S.NO	PARAMETER	OBSERVATION
1	Color	Greenish brown
2	Odour	No odour
3	Grittiness test	Smooth
4	Acid value	1.17

5	Saponification value	19.15
6	Ascorbic acid test	Yellow to blue
7	Sulphur test	Paper changed brown
8	Saponin test	Foam
9	pH	6.5
10	Specific gravity	0.842
11	Primary irritation test	No irritation

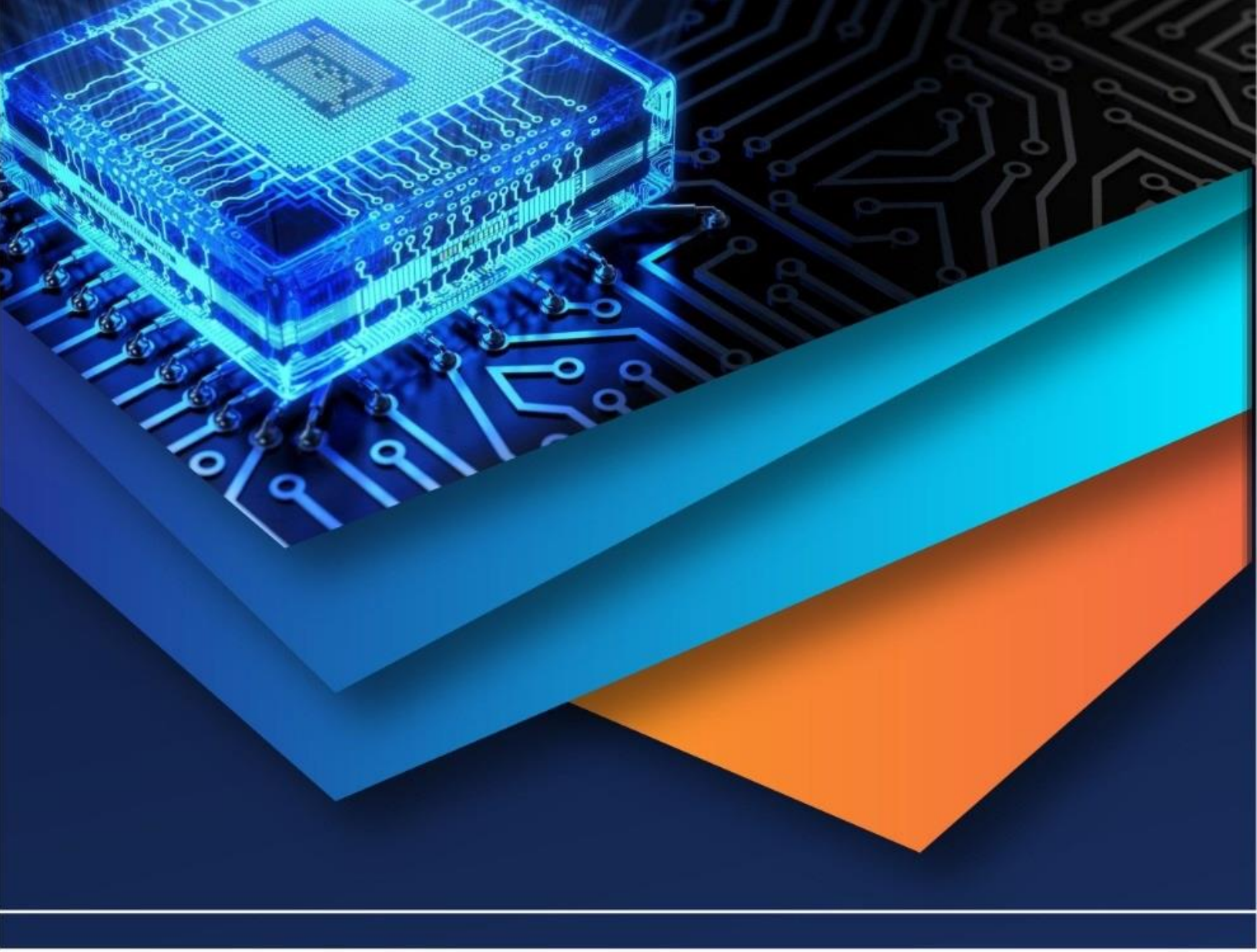
VI. CONCLUSION

This study on Herbal Hair oil is a great alternative to chemical – based hair products, as every ingredient used has numerous benefits and all the parameters indicate that they are within accepted limits, this oil aid in promoting healthy hair development, turning grey hair black, preventing dandfruff, and producing glossy hair. So, this Herbal Hair oil has minimal or no side effect. Generally, the herbal formulation helps to provide good blend of vitamins, essential oil and terpenoids. The final formulation prepared were assessed for characteristics like the texture, consistency, spreadability, and also skin irritancy. All these introductory requirements fulfilled the expectations. The resulting formulation have pH value within the Indian Standard Specifications permitted range and were found to be relatively close pH value to the pH range of skin. The use of plant based herbal drug product as a source for anti-fungal as well as antibacterial chemicals has been demonstrated successful.

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