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# FORMULATION AND EVOLUTION OF HERBAL HAIR OIL

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## ABSTRACT: -

Herbs & herbal drugs are clinically proven good for hair growth. Hair loss problems are of great concern to both males & females & the main problems associated with hair loss are hair fading, dandruff & falling of hair. Various synthetic medicines are available for hair loss which does not treat permanently & also show severe side effects. The main objective of this work is to develop an herbal hair oil formulation that can resolve the problems related to hair fall & other hair problems. An herbal cosmetic has a growing demand in the world market and is an invaluable gift of nature. The hair oil was prepared by mixing the herbs in a fixed proportion in a coconut oil base.

**KEYWORDS:-** Hair oil, herbs, drug, hair growth, herbal drug,

## INTRODUCTION

Pharmacognosy is the study of natural substances with therapeutic effects. The word comes from the Greek words for medicine and knowledge. Raw medicines are obtained from plant, animal, or mineral sources and used in nature. Ayurveda is a "life science" that uses herbs to maintain and promote positive health and treat illness. Herbal medicines derived from plants are believed to be safe in treating various diseases. The science of Ayurveda utilizes many herbs and floras to make cosmetics for beautification and protection from external effects.

The Natural content in the botanicals does not cause any side effects on the human body; instead, enriches the body with nutrients and other useful minerals. Cosmetics, according to the Drugs and Cosmetics Act are defined as articles intended to be rubbed, poured, sprinkled, or sprayed on, introduced into, or otherwise applied to the human body or any part thereof for cleansing, beautifying, promoting attractiveness or altering the appearance. Cosmetics do not come under the preview of a drug license. Hair loss is a distress in Each Hair grows in three cyclic phases viz., anagen (growth), catagen (involution), and telogen (rest). The anagen phase can be as short as 2-6 years. In the catagen phase, the growth activity

increases and hair moves to the next phase, the catagen phase is between 2-3 weeks. telogen phase is a state at which the hairs move into a resting state. This phase lasts for 2-3 months.

In general, 50 to 100 hairs are known to be shed every day and an increase of more than 100 constitutes a state of hair loss or alopecia the realization that chemical medicines do not always work as magic bullets and they may have side effects. The current trend moves toward the herbalism and use of natural products. Indian Herbs are the richest source to be used in cosmetic industries. Herbal drugs or their formulation are viable alternatives to synthetic drugs. Natural remedies have been used for centuries for treating alopecia. Natural products in the form of herbal formulations are available in the market and are used as hair tonics, hair growth promoters, hair-cleansing agents, antidandruff agents, as well as for the treatment of alopecia, dandruff, and lice infection.

Herbal hair oils are hypoallergenic and tested and proven by dermatologists to be safe to use anytime, anywhere. Since they are made of natural ingredients, people don't have to worry about getting skin rashes or experiencing skin itchiness. It includes amla, hibiscus, ashwagandha, neem, Brahmi, fenugreek, curry leaves, and coconut oil. Amla is rich in vitamin C which strengthens the hair follicles and is effective against dandruff. High iron Content stimulates hair growth. Hibiscus contains calcium iron, copper, zinc, and vitamin C used to stimulate thicker hair growth and prevent Premature graying of hair.

## HAIR FOLLICLE & HAIR STRUCTURE

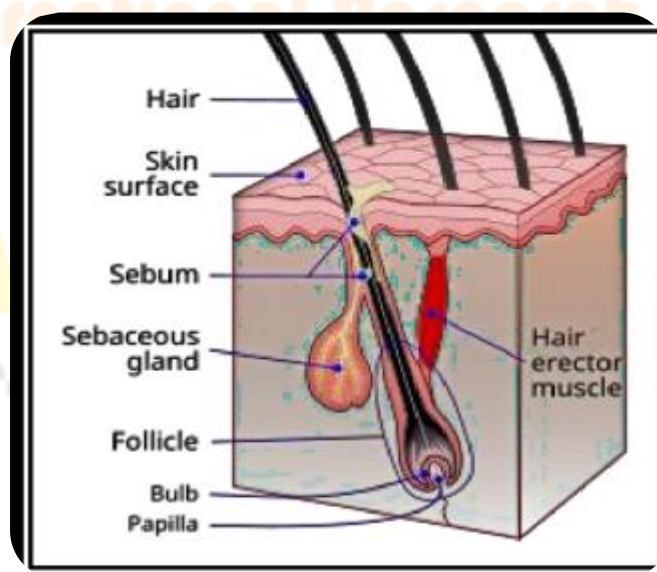
Human hair is divided into two parts. Hair root - (the roots are subterranean) - located under the epidermis. The hair stem lies above the epidermis.

Hair root: - Hair sheath pocket in the skin or the scalp, which contains the hair root.

Hair bulb - the lowest part of the hair; thickened, club-shaped.

Cutaneous papilla - a small cone-shaped bump located at the base of the hair follicle, which fits into the hair follicle.

Hairball Arrector pili muscle-small, involuntary muscle at the base of the hair follicle. When it shrinks, we get goosebumps.



**Fig.1: Hair roots**

**Sebaceous Glands** - thick glands of the skin that are connected to hair follicles; secretes sebum (greasy, oily substance)

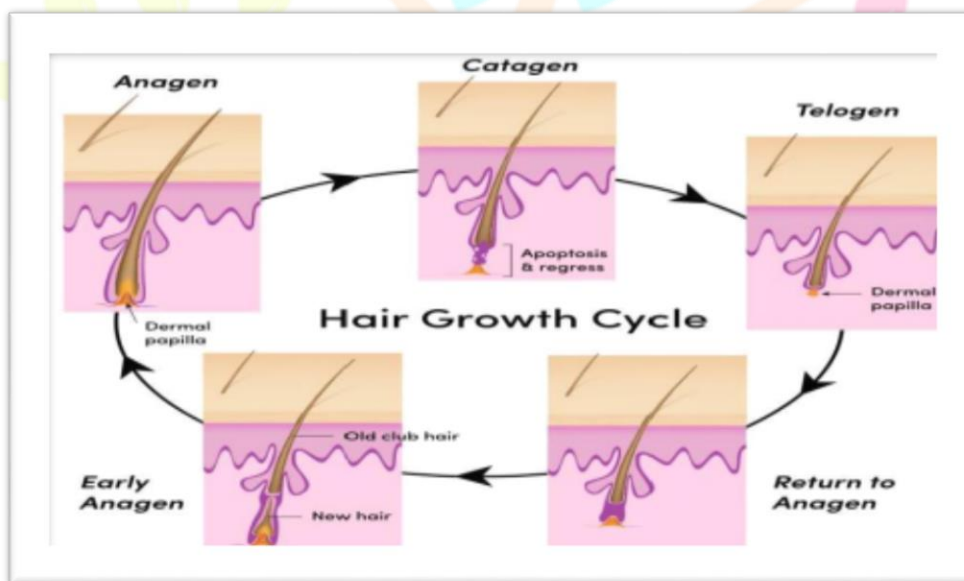
**The Bow-** is the part of the hair that consists of three layers of keratin. These layers are

1. Inner layer: Also called marrow. Depending on the type of hair, the core is not always present.
2. Middle layer: This is called cortex which makes up most of the hair.
3. Outer layer: also called cuticle which is densely packed scales form one above the other a structure similar to thatched roof.

### HAIR GROWTH CYCLE:

There are three stages of hair growth –

- a) Anagen phase: The Anagen phase is the growth of hair stage The anagen phase lasts Between 2-6 years. New hair pushes new hair which grows and emerges from the follicle.
- b) Catagen phase: The Catagen phase is in the transitional phase and 3% of all hair is in this stage whenever this stage lasts.
- a) Telogen phase: The Telogen phase is resting a phase that lasts about 2-3 months. While in the telogen phase, the hair follicle is at rest and club hair is fully formed.



**Fig.2 Hair Growth Cycle**

### HAIR OIL:

Hair oils are hair care products. Hair care products are defined as formulations used to clean, restructure, nourish, and maintain the healthy appearance of hair. Hair oil is a hair care product used to condition hair. Hair oil is used for hair diseases such as baldness, graying of hair, hair loss, dry hair, and also helps to nourish hair. Herbal cosmetics are in demand due to the increasing interest of mankind. Herbal cosmetics are also more effective with few side effects and ingredients are readily available. Herbal hair oil is an important part of herbal cosmetics. Herbal oil is preferred and is used in many hair salons. They not only promote hair growth but also provide the necessary moisture to the scalp, making hair beautiful. Legume oils containing herbal medicines are known as hair tonics. Legume oil contains several essential nutrients that are important for hair care. The normal functioning of the sebaceous glands and promotes natural hair growth. They are one

of the most well-known hair care products. The use of hair oil increases every day with the improvement of people's living standards. To give hair oil natural flavors and colors, herbal essences, and perfumes are added to it.



**Fig.3 Herbal hair oil**

### **Important Benefits of Hair Oil**

- It gives natural beauty to the hair. Vegetable oil contains vitamins and minerals nutrients that act as hair nourishment
- Hair oil helps prevent hair loss and reduces frizz. The ends of the hair need special care, and vegetable oil pampers them throughout the diet
- Regular use of hair oils cure the problem of premature grey hair
- It keeps scalp moist
- It improves hair growth
- It prevents dandruff
- It gives shine.
- It is used to relieve stress.
- it is used for longer and stronger hair.
- It is used to preservation of hair color.
- It maintaining hair health.



## **Ideal Characteristics of Hairs:**

- It should provide nourishment to hairs.
- It should provide moisturizing to hairs.
- It protect from damage hairs
- It improve hair texture.

## **OBJECTIVE**

- To prepare a polyherbal hair oil.
- To study the role of various herbs that are used for formulation.
- To provide nourishment to hair.
- To treat common hair problems.

## **ADVANTAGES HERBAL HAIR OIL**

- Grows new hair.
- It promotes hair growth.
- Prevents dandruff.
- Prevents premature greying of hair.
- Maintains a healthy scalp.
- Provide nourishment of hair.

## **MATERIAL AND METHODS**

Collection of plant parts: -

For the preparation of herbal hair oil various plant materials were collected from botanical garden of Gurukrupa Institute of Pharmacy, Majalgaon i.e. , amla, curry leaves, jasmine, onion, ashwagandha, and ginger. coconut oil is collected from local market.

## **DRUG PROFILE**

### **AMALA**

Amla *Phyllanthus emblica* is an important medicinal plant in the Indian traditional system of medicine. The tree is 1-8 meters in height. The leaves are simple and alternate along the branchlets. The flowers are of greenish yellow color. The fruit is nearly round and has a hard appearance.



**Fig.4 Amla**

**Synonym:** - Indian gooseberry, malacca tree, emblic, *phyllanthus emblica*, indian currant

**Biological source:** - It is obtained from the fruit of *Indian gooseberry*

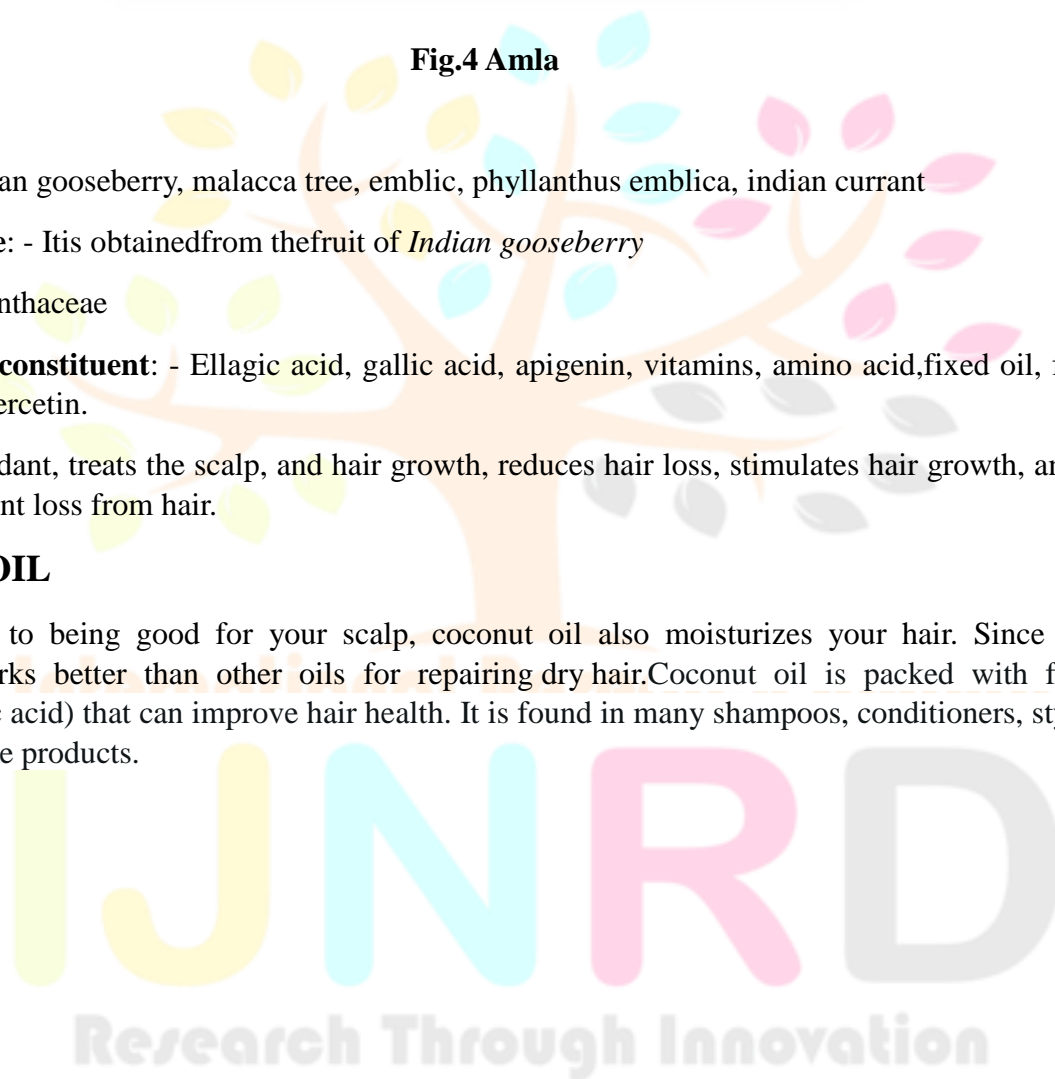
**Family:** - *phyllanthaceae*

**Chief chemical constituent:** - Ellagic acid, gallic acid, apigenin, vitamins, amino acid, fixed oil, flavonoids like rutin and quercetin.

**Uses:** - Antioxidant, treats the scalp, and hair growth, reduces hair loss, stimulates hair growth, and reduces premature pigment loss from hair.

## **COCONUT OIL**

In addition to being good for your scalp, coconut oil also moisturizes your hair. Since it's easily absorbed, it works better than other oils for repairing dry hair. Coconut oil is packed with fatty acids (especially lauric acid) that can improve hair health. It is found in many shampoos, conditioners, styling gels, and other haircare products.





**Fig.5 coconut oil**

**Synonym:** - *cocos nucifera*, coconut fat, copra oil, animal oil, apricot oil, marula oil

**Biological source:** - it is obtained from fruit and oil of the plant *cocos nucifera*

**Family:** - Aceraceae

**Chief chemical constituents:** - Lauric acid, myristic acid, palmitic acid, oleic acid, linoleic acid, etc.

**Uses:-** Provides nourishment, to prevent dandruff, protect hair against styling damage

## ASHWAGANDHA

The study found that topical Ashwagandha (serum) improved hair growth and hair health indicators. Thus, it can be an effective and safer alternative for alopecia. ashwagandha can offer healthy and shiny hair if used regularly. It provides stress relief and may reduce stress-induced hair loss.



**Fig.6 Ashwagandha**

**Synonym:** *Withania somnifera*, false unicorn, balya, vajikari.

**BiologicalSource:** It is obtained from dried roots of *Withania somnifera*

**Family:** - Solanaceae

**Chief chemical constituent:** Withaferin A, alkaloids, saponins, volatile oil, withanolids etc.

**Uses:** Antioxidant, Parkinson, memory loss, improved hair growth, and hair health indicators, relieve stress.

## CURRY LEAVES

In addition to that, curry leaves are beneficial to the hair since they are high in beta-carotene and protein content, which are instrumental in preventing hair loss and thinning of hair. You may be familiar with curry leaves as an aromatic culinary herb with a citrusy flavor. Yet they have many other uses, including in hair care. Curry leaves aren't the same thing as curry leaves, which is a blend of several spices. The curry leaf plant, native to India, Sri Lanka, and other South Asian countries, is also known as *Murraya koenigii* or kadi patta.



**Fig.7 Curry leaves**

**Synonym:** - *Murraya koenigii*, kadi patta, mitha neem, chalcas koenigii.

**Biological source:** -it is obtained from leaves of the Plant of *murraya koenigii*

**Family:** - Rutaceae

**Chemical constituents:-** Alpha terpene, linalool, elemol, alpha terpinene, flavonoids, phenolics, carbohydrates, carotenoids, vitamins.

**Uses:-** Treat dry scalp, prevent hair fall, improve hair growth.



## ONION

Onion hair oil helps prevent thinning hair and induces hair growth. Sulfur helps in the formation of bonds in our hair, thus preventing split ends and strengthening each hair follicle. Onion juice contains sulfur, which prevents hair loss and breakage. In addition, its antimicrobial qualities help prevent infections on the scalp and encourage healthy hair development.



**Fig.8 Onion**

**Synonym:** - Onion, *allium ascalonicum*, Japanese leek.

**Biological source:** - It is obtained from bulb of the Plant *Allium ascalonicum*

**Family:** - Alliaceae

**Chemical constituents:** - allicine, quercetin, and other sulfurous compounds

**Uses:** - Antiallergic, Antimicrobial, adds shine, improve hair texture and health, combats hair loss.

## GINGER

Ginger oil is an essential oil extracted from the root of the plant that prevents hair loss and dandruff, increases hair growth, and is also an amazing natural conditioner. Ginger is packed with calcium, magnesium, iron, zinc, and copper, Mariwalla also explained that ginger, when used properly, can have certain benefits for those who struggle with scalp health issues. Mariwalla says that ginger can help to strengthen the hair and reduce the signs of brittleness.



**Fig.9 Ginger**

**Synonyms:** - zingiber, brunette, gingery, peppiness, carrot.

**Biological source:** - It is obtained from dried rhizome of *zingiber officinale*

**Family:** - Zingiberaceae

**Chemical constituents:** - phenolic and terpene compound, ether extract, vitamin C, gingerols, shogaols, and paradols.

**Uses:** - It is used as an aromatic, carminative, stimulant, and medicine, to prevent hair loss, prevent dandruff, natural conditioner.

## JASMINE OIL

Jasmine oil can effectively lock in moisture, thereby keeping your hair and scalp well-nourished and healthy. It is not only known for its antibacterial but also for its antiviral properties.



**Fig.10 Jasmine oil**

**Synonym:** - Jasminum officinale, Jasminum, common jasmine, Arabian jasmine


**Biological source:** - It is obtained from flowers of the common jasmine plant, also known as *Jasminumofficinale*.

**Family:** - Oleaceae

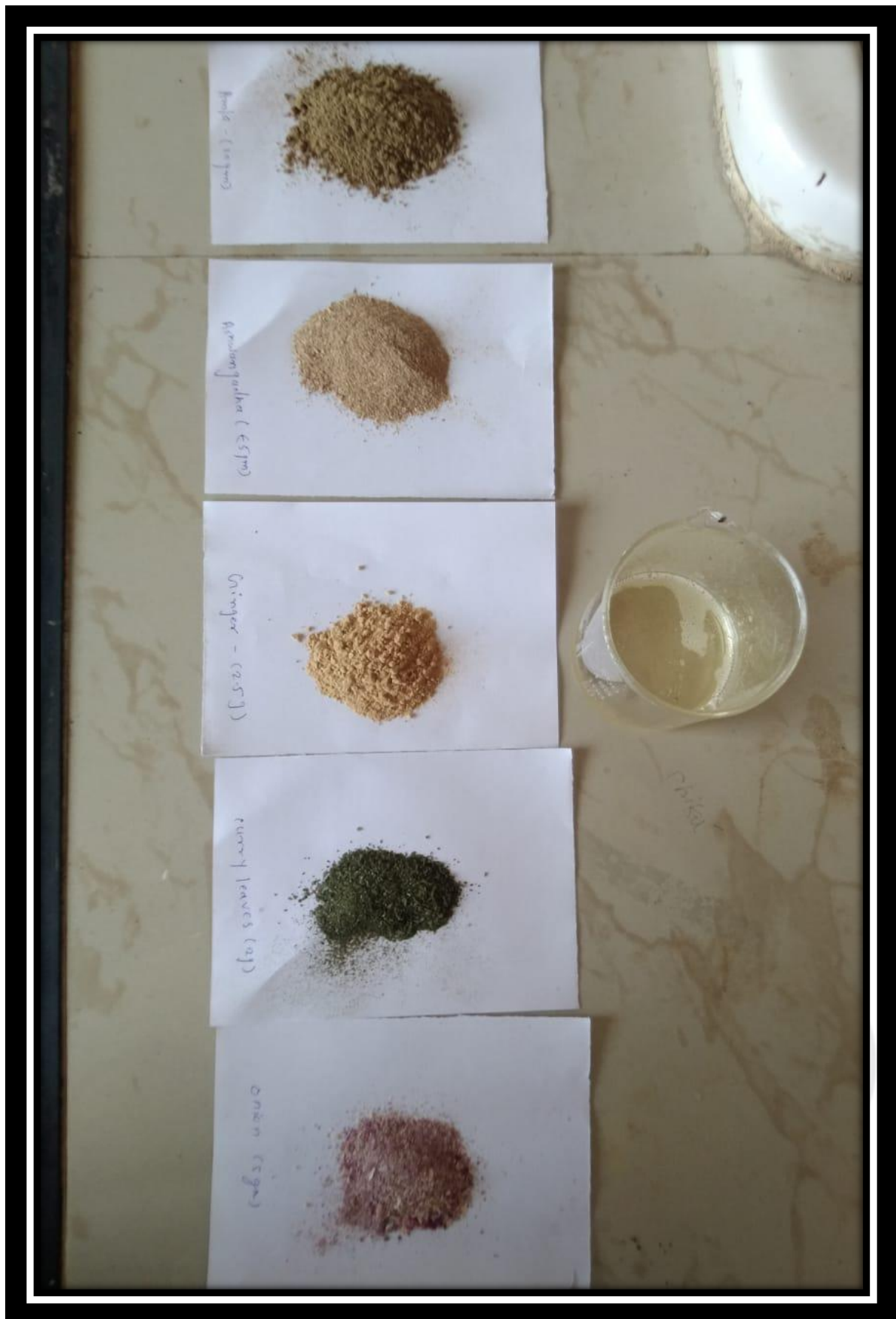
**Chemical constituents:** - benzyl acetate, linalool, benzyl alcohol, indole, isophytol, phytol, phytol acetate, methyl jasmonate, jasmine, geranyl

**Uses:** - Deep hydration, antioxidant, oil production balance, moisturizing properties to stop and prevent hair breakage.

## FORMULATION OF HERBAL HAIR OIL



SR.NO	INGREDIENTS	QUANTITY
1	AMLA	20 GM
2	ONION	10 GM
3	ASHWAGANDHA	10 GM
4	CURRY LEAVES	5 GM
5	GINGER	5 GM
6	JASMINE OIL	1 ML
7	COCONUT OIL	Q. S



## PROCESS OF FORMULATION

1. Weigh all ingredients containing dry powder of amla, curry leaves, onion, ashwagandha, ginger, etc.
2. Grind all ingredients using mortar and pestle



3. Mix all ingredients.
4. Then boil the mixture in coconut oil.
5. Filter mixture and then add coconut oil again to make up the volume up to 100 ML.
6. Preserve the obtained oil at room temperature.



Fig. Formulation Of Herbal Hair Oil (100ml)

## EVOLUTION OF HAIR OIL

The formulated herbal oil was subjected to physical and biological evaluation.

- **Organoleptic property:** Different organoleptic properties Like colour, physical state, odour, were determined manually.
- **Acid Value:** Preparation of 0.1 molar solutions: Weighed 0.56 g KOH pellets and dissolved in 100 ml of distilled water and stirred Continuously. The prepared 0.1 molar KOH solution was filled in the burette. Preparation of sample: Measured 10 ml oil and dissolved in 25 ml of ethanol and 25 ml of ether mixture and shaken. Add 1 ml of phenolphthalein solution and titrate with 0.1 molar KOH solution.
- **Saponification Value:** Accurately weighed 1 ml of oil into a 250 ml conical flask and 10 ml of ethanol: ether mixture (2: 1) was added. To this flask 25 ml of 0.5 N alcoholic KOH was. Kept the flask for 30 min. The flask 0.5 N HCL using phenolphthalein indicator Similarly the blank titration was performed without taking oil (sample). The amount of KOH in mg used was calculated.
- **pH:** The pH of herbal oil was determined using a pH meter The most accurate common means of measuring pH is through a lab device called a probe and meter, a PH meter. The probe consists of a glass electrode through which a small voltage is passed. The meter, a voltmeter, measures the electronic impedance in the glass electrode and displays pH units instead of volts. A pH meter typically has to be calibrated before each use with two standard liquid solutions of known pH. Measurement is made by submerging the probe in the liquid until a reading is registered by the meter.

- **Viscosity:** The viscosity of herbal oil was determined using Ostwald's viscometer. Take the specific gravity bottle, rinse it with distilled water, dry it in the oven for 15 minutes, cool, close it with a cap, and weigh it.  
(a). Now fill the same specific gravity bottle with the sample close it with a cap and again weigh it.  
(b). Determine the weight of the sample per milliliter by subtracting the weight (b-a).
- **Irritation test:** The prepared formulations were assessed for primary skin irritation test. Healthy human volunteers were selected for the study. The Quantities of formulations were applied over the respective test sites and were observed for erythema and edema for 48 hours after application.

**LABEL: -**

HERBAL HAIR OIL – 100 ML	
Ingredients	
Amla – 20 gm	Mfg. date – 5/24
Onion – 10 gm	Exp. Date – 5/25
Ashwagandha – 10 gm	Batch no. – GIPB2024
Curry leaves – 5 gm	M.R.P – 79 RS (incl. of tax)
Ginger – 5 gm	Storage – store cool and dry place
Jasmine oil – 1 ml	Net volume – 100 ml
Coconut oil – q. s	License no. 2020015315
Direction – External use only	
Mfg. by -Gurukrupa institute of pharmacy, mali paragon phata, majalgaon	



## RESULT

Overall, the formulated herbal oil provides many nourishing values to hair such as vitamins, minerals, and essential oils. The finished product is within the limits.

Sr. no	Parameter	Observation
1	Colour	Yellowish brown
2	Odor	Aromatic
3	Physical state	Liquid
4	Acid value	3.3 + 0.4
5	Saponification value	240.99 + 0.6
6	pH	6.82 + 0.02
7	Viscosity	0.95 + 0.5
8	Irritation Test	No Irritation

## CONCLUSION

The utilization of herbal hair oil in cosmetics enhanced many folds in personal hygiene and health care system. Herbal oil is one of the most well-recognized hair treatments. The use of different herbal materials which have different benefits with good combinations will have a great effect on hair. The herbal extracts and constituents chosen for the formulation of hair oil were reported to have hair growth, relaxation, and anti-dandruff, hair thickening, and hair fall control properties, which when used together give a synergistic effect in promoting healthy and shiny hair growth. The formulation was proven to be safe for human use.

Hair oil formulations with good values of evaluation parameters show similar benefits in maintaining good hair growth of the hair turning grey hairs to black protecting dandruff and resulting in lustrous-looking hairs. Also, hair oil will help in maintaining good growth of hair, not only that it also turns grey hair to black, and protects from dandruff meters street. It provides various potential nutrients required to maintain normal function of sebaceous glands and promote natural hair growth. The formulation was done and evaluated using parameters like pH, greenish brown organoleptic properties (color, odor, sensitivity, sedimentation), acid value, viscosity. At last, it can be concluded that the herbal hair oil is formulated.

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