



Formulation & Evaluation Of Herbal Hair Oil

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ABSTRACT

Herbal formulations always have lesser or no side effects comparatively with synthetic. The aim of present study involves preparation of herbal hair oil using the herbal ingredients like., Amla, Hibiscus, Bhringraj, Jatamansi, Raw garlic, Muskmelon seeds, Moringa, Curry leaves, Guava leaves, Papaya leaves, Methi, Mimosa Pudica and Springonion. Based on the above observations, mixture of crude drugs was prepared in the form of herbal hair oil by boiling method. We have used five formulas using different herbal drugs and all the formulation are showing anti-hairfall property with some of other beneficial activities like anti-dandruff activity, improves blood circulation to the scalp and roots, reduce hair pigmentation, anti-fungal activity, reducing the whitening of the hair. The formulate herbal oil was evaluated by using various parameters such as Organoleptic properties, specific gravity, stability, viscosity, Acid value, pH etc. and the value obtained from it are found to be similar to that of the standard values like there is no sedimentation, no grittiness and shows satisfying organoleptic properties and the results were determined and are reported in this work.

Keywords: Hair oil, herbs, formulation, preparation, evaluation, results and discussion.

I. INTRODUCTION

Hair plays an important role in human life¹. In India the traditional process is the preparation of hair oils put together with various hair growth promoting drugs. Indian women are known for their long, shiny and healthy hair, so it is not surprising that hair care features prominently in their self-care rituals. The Charaka Samhitha (the definitive book on Ayurvedic medicine) describes the importance of oiling the hair and scalp to maintain good hair health and prevent hair loss. The daily hair oiling was recommended with appropriate herbs filled to suit others constituents and this practice also continuous until today². The hair oil preparations are included to treat various dandruff, hair fall process, split ends etc. The hair oil preparations are mainly used to cool the scalp for luxurious growth of hair in both men and women.

Various types of oils like coconut oil, almond oil, castor oil, onion oil are applied to scalp in admixture with suitable herbal drugs. Among these oils coconut oil is the foremost worthy oil base because it get absorbed into the hair strands better than other oils and also economical compared to other oils. Hence coconut oil added with herbal drugs is mentioned method for best hair growth³. Hair on our head is the first line defense against the sun's UV rays. Hair care product are nothing but it is those formulations which are used for modifying the texture of hair. Herbal cosmetic are highly used due to their less adverse effects and the ingredients used are easily available. Now a days hair care cosmetic are added with herbs and they are well recognized compared with synthetic ones. These years, apart of the hair care routine the use of hair oil has been increasing and it is due to their benefits in addressing the hair concerns.

Hair oils are formulated with both synthetic and natural ingredients⁴. Synthetic hair oils are those hair care products which are made by chemical or artificial substances. They are used to provide shine and excellent conditioning and they also helps to reduce frizz. Natural hair oils are the hair care products which are rich in Vitamins, Minerals and Fatty acids which are the vital elements in the human cells and these elements are also present in the skin and hair of our body. Hence, while we are applying the natural Hair care products are those formulations which are used for cleansing, modifying the texture of hair, changing of the colour, giving life to the stressed hair, providing nourishment to the hair and hair oils, we are allowing these vital nutrients to absorb well into the scalp and hair thus it helps for a healthy regeneration of the scalp and a strong and healthy hair growth. Apart from hydrating your scalp and stimulating hair growth, hair oiling also strengthens the hair. And it also provides important minerals and nutrients for the scalp. This will prevent external damage and strengthens the hair as well. The primary purpose of oiling is a prerequisite to condition the scalp. An oil massage also increases the hair growth by stimulating the hair follicles and improving blood circulation to the scalp. Herbal formulation is completely made up of natural sources derived from the plants. It is applied to the hair as a cosmetic, conditioner, styling aid, restorative and also as a tonic. There are different types of hair oils and all these are used for different purposes such as hair growth, health, dryness, scalp, fix damaging hair also used for dandruff, split ends and greying of hair etc⁵. The various forms of hair oils such as natural hair oils which includes traditional hair oils like coconut, castor, almond oil etc. It could be introduced in a hair care routine in many different ways. Hence it gains an important role all over the world. Hair oiling is the practice of pouring oil onto the hair and massaging it into the scalp to increase moisture, luster, shine and also increase the blood circulation.



Fig no:1



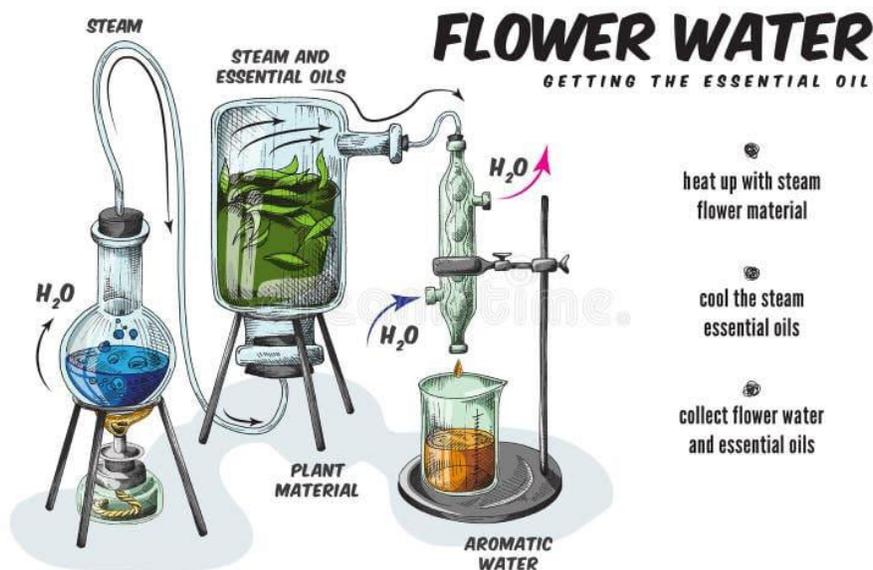
The hair oiling may soften the hair and also provides the vitamins and minerals that get stripped from frequent washing. giving the healthy appearance to the hair. Hair oils are the hair care formulations applied for treatment of hair. The addition of perfumes enhances the fragrance and overall improves its popularity. The nature of oil is non sticky. Proper application of hair oil most importantly gives cooling effect to brain as well as luster to hair, softening the hair, gives flowness to hair⁶. The basic parts of hair are bulb (a swelling at the base which originates from the dermis), root (which is the hair lying beneath the skin surface), shaft (which is the hair above skin surface). The growth of hair having cyclic phases divided into following: anagen (growing phase), catagen (involution) &

telogen (rest). The anagenphasecanbeshortas2-6yr.Catagenphaseisbetween2-3weeks.Telogen phase lasts for 2-3 month7. Herbal hair oil not only moisturize scalp but also reverses dry scalp & dry hair condition. It provides numerous essential nutrients requiredtomaintainnormalfunctionofSebaceousGland&promotenormalhair growth. The plant parts which used are highly enriched with flavonoid, polyphenols, saponins, tannin, vitamins, proteins and mineral, ricin oleic acid etc. And these constituents helps in the hair growth and also give many benefits for hair8.



Fig no: 2





The herbal hair oil formulation has significant quality and it provides various essential nutrients used to maintain the normal functions of the sebaceous glands and promote the hair growth naturally¹⁰. And the use of herbal cosmetics improves the personal hygiene as well as the health care system. In formulation the use of bioactive ingredients have great effect on body features and also gives nutrients which are required for maintaining healthy and attractive hairs. It is not having or comparatively lesser side effects as it is formulated from herbal ingredients¹¹. After the preparation we have to perform the evaluation test. Evaluation provides a systematic method to study a program, practice, intervention or the initiative to understand how well it achieves its goal. It also helps to determine what works well and what could be improved in a programme¹². There are different types of evaluation test for hair oils such as:

- ❖ Acid valuetest
- ❖ Saponificationtest
- ❖ PH
- ❖ Viscosity
- ❖ Specific gravityetc.¹³

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Objectives of the present study are as follows:

Herbal hair oil is one of the most well recognized hair treatments. Herbal hair oil not only **moisturizes scalp** but also reverses dry scalp and dry hair condition. It provides numerous essential nutrients required to maintain normal function of sebaceous glands and promotes natural hair growth.

- Natural goodness of hair
- Relaxing massage for healthy scalp
- Fights against hairfall
- Control frizzy hair
- To promote hair growth
- To discuss the uses and benefits of different ingredients used in the formulation of hair oils
- To identify the good combination of herbs which will give maximum effect
- To study the formulation, preparation and evaluation of polyherbal hair oils.

Types of Herbal Hair Oil Available in Market

- 1. Amla hair oil
- 2. Coconut hair oil
- 3. Bhringraj hair oil
- 4. Jasmine hair oil
- 5. Brahmi hair oil
- 6. Cantharidin hair oil
- 7. Onion hair oil

Benefits

- It gives hair its natural sweetness.
- Vitamins and micronutrients found in herbal oil serve as sustenance for hair.
- Hair oil is a great way to tame frizzy hair and prevent hair loss.
- Herbal oil provides hair ends with the pampering and nourishment they require.

- The problem of premature grey hair can be resolved by regularly using hair oil.
- Prevents dandruff, enhances hair growth and keeps the
- Nourish the scalp and hair
- Protect the scalp from sun and wind damage
- Keep the scalp hydrated
- Reduce dandruff and itchiness
- Stimulate hair growth
- Make hair shinier and soft

DRUG PROFILE:

Coconutoil

Family- Aceraceae.

Scientific name- Cocos nucifera L.

Parts used- kernel oil.

Geographical location: Southern India.

Active constituents- Fatty acid, capric acid, lauric acid.

Uses- Used as vehicle, promotes hair growth and moistures the hair follicles.



Fig no:3

❖ Tilloil:

Family- Pedaliaceae.

Scientific name- S. indicum.

Parts used- Seeds oil.

Geographical location- Middle east states of India.

Active constituents- Sesamin, palmitic acid and Linoleic acid.

Uses- Used as vehicle, Makes hair smoother and good for dry hair and scalp.



Fig no:4

❖ **Castor oil:**

Family- Euphorbiaceae.

Scientific name- Ricinus communis L.

Parts used- Seeds oil.

Geographical location- Gujarat in western India.

Active constituents- Phytosterols, tocopherols, carotenoid.

Uses- Lubricate the hair shaft, increases flexibility and also treats dandruff.



Fig no:5

❖ **Almond oil:**

Family- Rosaceae.

Scientific name- Prunus dulcis.

Parts used- Dried kernels of almond tree.

Geographical location- Northern India.

Active constituents- Palmitic acid, linolic acid, oleic acid.

Uses- Strengthen the hair, protect the hair from sunlight, use as scalp treatment.



Fig no:6

❖ **Curry leaves:**

Family- Rutaceae.

Scientific name- Murraya koenigii.

Parts used- Leaves.

Geographical location: Subtropical and tropical regions through the Asia.

Active constituents- Bismahanine, murrayanine, murrayazolinol.



Fig no:8

❖ **Methileaves/Fenugreek:**

Family- Fabaceae.

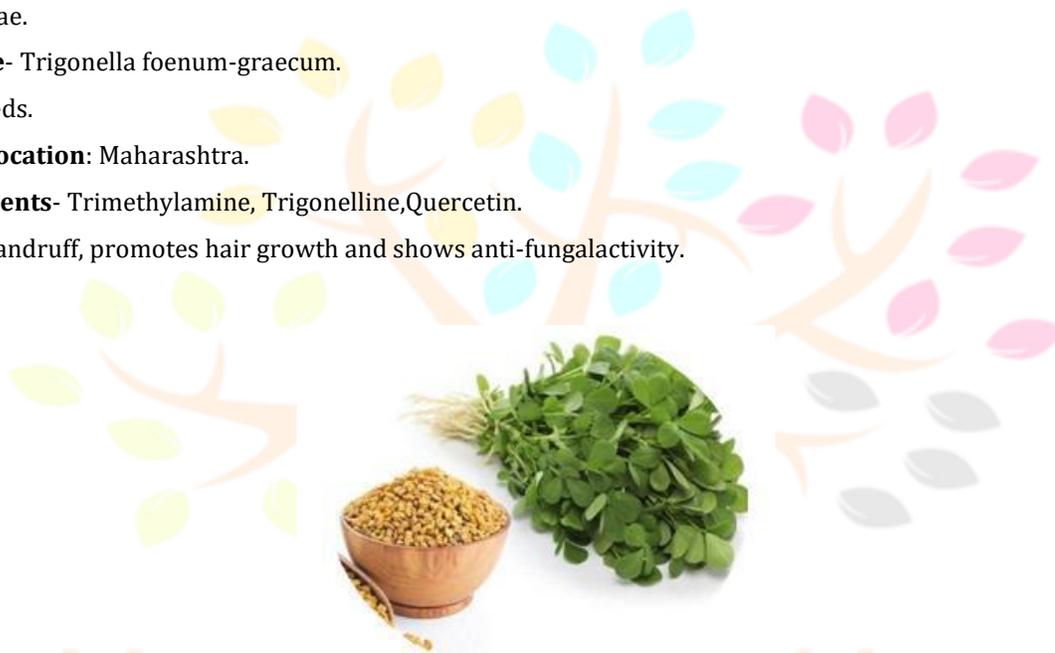
Scientific name- Trigonella foenum-graecum.

Parts used- Seeds.

Geographical location: Maharashtra.

Active constituents- Trimethylamine, Trigonelline, Quercetin.

Uses- Reduce dandruff, promotes hair growth and shows anti-fungal activity.



❖ **Jasmineoil:**

Family- Oleaceae.

Scientific name- Jasminum officinale.

Parts used- Oil of jasmine oil.

Geographical location- Tamil Nadu.

Active constituents- Benzyl acetate, Linalool Benzyl alcohol.

Uses- Flavoring agent.

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❖ **Moringa:**

Family- Moringaceae.

Scientific name- Moringa oleifera.

Parts used- Leaves.

Geographical location: Southern states of India.

Active constituents- Flavonoids, glycosides, alkaloids.

Uses- Strengthen the hair and moisturize scalp.



❖ **Rawgarlic:**

Family- Amaryllidaceae.

Scientific name- Allium sativum.

Parts used- Bulbs of the garlic.

Geographical location- Gujrat, Madhya Pradesh, Maharashtra and Rajasthan.

Active constituents- Diallyl thiosulphate, Diallylsulfide, Diallyl Trisulfide.

Uses- Shows antimicrobial properties and contain vitamin C helps to promote hair growth.



❖ **Pumpkinseeds:**

Family- Cucurbitaceae.

Scientific name- Cucumis sativus.

Parts used- Seeds.

Geographical location- West Bengal and Uttar Pradesh

Active constituents- Palmitic acid and Stearic acid.

Uses- Contains cucurbitin responsible for hair growth.



❖ **Betel Leaves:**

Family- Piperaceae

Scientific name- Piper betle. L.

Parts used- Leaves.

Geographical location- Assam, Andhra Pradesh, Bihar, Gujarat, Odisha, Karnataka, Rajasthan, West Bengal.

Active constituents- Alecoline, Vitamin C, Thiamine, Niacine, Riboflavin.

Uses- For quick hair growth, treats dandruff and split ends.



❖ **Cedarwood oil:**

Family- Pinaceae.

Scientific name- Cedrus.

Parts used- Cedarwood oil.

Geographical location- Himachal Pradesh, Uttarkhand, Jammu and Kashmir

Active constituents- Methyl Thujate and thujic acid.

Uses- Cleanse the scalp, removing dirt and dandruff and it enhances the circulation to the scalp and tightens the follicles.14



- ❖ **Habeeba Shaikh et al.,** Was concluded that hair care cosmetics added with herbs are well recognized composed of synthetic one. The formulation done with natural herbs are better and not having much side effects compared with the synthetic one.
- ❖ **S.Gejalakshmi et al.,** Says that herbal hair oils maintain normal functions of sebaceous gland and promotes natural hair growth by providing numerous essential nutrients required to it. India has a wide variety of medicinal herbs with various cosmetic and healing properties.
- ❖ **Rahathunnisabegum et al.,** Showed that Methicarb hair fall and strengthens your hair from root to tip. Almond oil is rich in vitamin E and are used for hair loss and strengthen the hairs. Coconut oil nourishes the scalp gives shine to the hair and the Jasmine which serves as antimicrobial agent, conditioning agent and also gives good odour to the oil.
- ❖ **T. Usha Kiran Reddy et al.,** Says that addition of Neem acts as anti-dandruff. Amla helps in thickening and blackening of hair and Hibiscus helps in hair softening resulting in healthy growth. All these dried and fresh ingredients mixed with coconut oil will give a solution for hair fall and proper hair growth. And the use of hair oils used for headaches due to the cooling effects and also helps in relieving from stress and strain conditions.
- ❖ **Ranganathan et al.,** Found out that the herbal hair oil is more effective in reducing the hair fall when compared to coconut oil by Three-month evaluation of a herbal hair oil versus coconut oil was conducted on human volunteers with hair fall problem in a Y. M. T. Ayurvedic Medical College, Kharghar. Combining assay was performed to evaluate the efficacy of the herbal hair oil. The final study shows that the test oil was effective in reducing the hair fall.
- ❖ **Kalpesh Gaur et al.,** Found out that the hibiscus is having many good activities which is beneficial to hair and the hydro-alcoholic extract of Hibiscus rosa Sinensis Linn. was found to possess significant immunostimulatory action on immune system.
- ❖ **Shirode, D et al.,** Suggested the hair growth activity of Hibiscus rosa-sinensis & Glycyrrhiza glabra were evaluated in albino rats. The extract of Hibiscus rosasinensis (petroleum ether & benzene extract) & Glycyrrhiza glabra (alcohol Extract) respectively 0.2% w/v & 2% w/v exhibit maximum hair growth activity as compared to standard group animals as treated with minoxidil solution (2% w/v).
- ❖ **Srivastava Varnika et al.,** Shared the details and the medicinal uses of Mimosa pudica (touch me not plant)
- ❖ **Kabyashi, N et al.,** Effects of 70% ethanolic extract from leaves of Ginkgo biloba on the hair regrowth in normal and high better diet-pretreated C3H strain mice which posterior hair we shaved were investigated. GBE showed a promoting effect on the hair regrowth.
- ❖ **B. Ramya Kuber et al.,** It is concluded that the oil is beneficial in maintaining good growth of hairs, turning grey hairs to black, providing protection from dandruff and results in lustrous looking hairs.
- ❖ **Saraswat Nikita et al.,** Due to the presence of natural ingredients, this formulation proves to be a boon to fight the trending problem of hair fall due to various reasons. Minoxidil was used as a standard to evaluate the effectiveness of the herbal oil prepared. The herbal oil prepared was found to be more effective than the standard preparation of Minoxidil for stimulating hair growth in cases of treating Alopecia.

- ❖ **Ademiluyi AO et al.**, Modulatory effects of dietary inclusion of garlic (*Allium sativum*) on gentamycin–induced hepatotoxicity and oxidative stress in rats.
- ❖ **Allison GL et al.**, Aged garlic extract inhibits platelet activation by increasing intracellular cAMP and reducing the interaction of GPIIb/IIIa receptor with fibrinogen.
- ❖ **Roy, R.K et al.**, Found that the Petroleum ether extract of *C. reflexa* exhibited promising hair growth–promoting activity as reflected from follicular density, anagen/telogen ratio, and skin sections.
- ❖ **Ram Kumar Roy et al.**, Studied the Development and evaluation of polyherbal formulation for hair growth–promoting activity and revealed that hair growth initiation time was markedly reduced to one third on treatment with the prepared formulation compared with control animals.
- ❖ **Libecco JF et al.**, The seeds of *Tectona grandis* Linn. Are traditionally acclaimed as hair tonic in the Indian system of medicine. Hair growth initiation time was significantly reduced to half on treatment with the extracts compared to control animals. The treatment was successful in bringing a greater number of hair follicles (64% and 51%) in anagenic phase than standard minoxidil (49%). The results of treatment with 5% and 10% petroleum ether extracts were comparable to the positive control Minoxidil¹⁵.
- ❖ **Budd D et al.**, A questionnaire designed specifically to evaluate attitudes to hair loss. Men with greater hair loss were more bothered, more concerned about looking older due to their hair loss, and less satisfied with their hair appearance. Male pattern hair loss has significant negative effects on hair-loss specific measures in men 18 to 40 years of age in France, Italy, Germany and the UK. The degree that hair loss is perceived as noticeable to others appears to be a significant contributor to these negative effects¹⁶.
- ❖ **Mithal BM et al.**, A handbook of cosmetics. 1st ed. Vallabh prakashan studied that Hibiscus consists of calcium, phosphorus, iron, copper, zinc, vitamin B1, riboflavin, niacin, and vitamin C which is used to stimulate thicker hair growth by strengthening the strands and prevents premature graying of hair¹⁷.
- ❖ **Shah CS et al.**, A Textbook of Pharmacognosy. 11th Ed. B.S. Shah Prakashan, Ahmedabad, 1996, 119 has studied that



Formulation**Table no: 5**

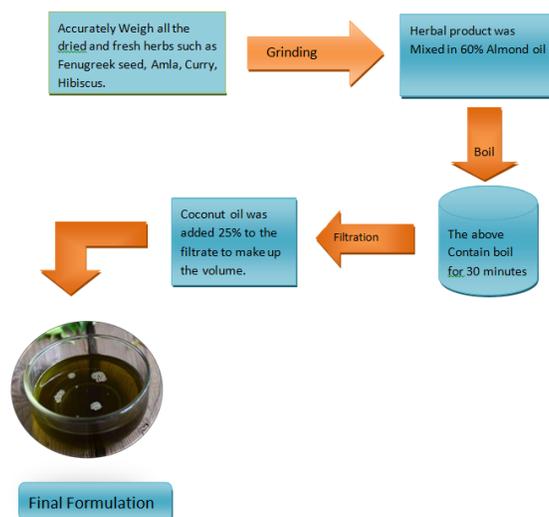
INGREDIENTS	QUANTITY (%)
Coconut oil	60%
Till oil	15%
Almond oil	2%
Cedarwood oil	2%
Castor oil	3%
Curry leaves	1%
Moringa leaves	4%
Raw garlic	4%
Jasmine	2%
Betel leaf	3%
Fenugreek	2%
Pumpkin seeds	2%

- Accurately weigh all the dried and fresh herbs such as, Fenugreek seed, Moringa leaves, Raw garlic, Curry leaves, Betelleaves.
- Herbal product was mixed in Coconut oil, Till oil, Almond oil, Castor oil, The above content was boiled for 30 mins.
- Boiled mixture was subject for filtration through muslin cloth. After filtration coconut oil was added to the filtrate to make up the volume.
- Finally, flavoring agent was added to the oil and was placed in a bottle.

Method of Preparation

- Accurately weigh all the dried and fresh herbs such as, Fenugreek seed, Amla, Curry, Hibiscus.
- Herbal product was mixed in 60% Almond oil. The above content was boiled for 30 min.
- Boiled mixture was subject for filtration through muslin cloth. After filtration coconut oil was added 25% to the filtrate to make up the volume.
- Finally, flavouring agent was added to the oil and was placed in a bottle [1].





Evaluation Parameters: Evaluation Test for Hair Oils

1. Physical appearance

Sr. No	Parameters	Result
1	State	Liquid
2	Colour	Greenish Brown
3	Order	Aromatic

Table 10: Evaluation Parameters.

2. Determination of pH: The pH of hair oil was determined using a pH meter. (Janki pH meter J 35)

3. 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 10 mL oil was measured and dissolved in 50 ml of 1:1 ethanol and ether mixture and shaken vigorously. 1 mL of phenolphthalein solution was then added and titrated with 0.1 molar KOH solutions.

4. Saponification Value: Accurately weigh 1 ml of oil into a 250 ml of 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 added. Keep the flask for 30 min and the flask was cooled. The cooled solution was titrated against 0.5 N HCl using phenolphthalein as indicator. Similarly, the blank titration was performed without taking oil (sample). The amount of KOH in mg used was calculated. Saponification value = $(B-S) N/W$ Where, S = ml of KOH required to neutralize the substance B = ml of KOH required for blank N = Normality of standard Hydrochloric acid. W = Weight of the sample taken for the test (g).

5. Sedimentation: Keep the whole preparation aside for overnight and check for sedimentation occur in oil.1.

6. Skin Irritation Test: The prepared herbal oil was applied on 1 cm skin of hand and exposed to sunlight for 4-5 min

EVALUATION PARAMETERS:

EVALUATION TEST FOR HAIR OILS

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

1. OrganolepticProperty

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

2. pH Determination

Take a pH paper and dip into the formulated hair oil and check for the color change.

3. Viscosity Measurement The viscosity of prepared herbal hair oil was estimated by Ostwald's Viscometer at a room temperature. The viscosity of prepared herbal hair oil was calculated by using the equation, $\eta_1 \times t_2$

Viscosity of liquid (η_2)=

$\rho_1 t_1 \eta_1$ = Viscosity of water ρ_2 = Density of sample t_2 = Mean time of oil from A to B ρ_1 = Density of oil t_1 = Mean time of flow of water from A to B

4. Acid Value

10 ml of oil was added with 25ml of ethanol and 25ml of ether. Phenolphthalein was added as indicator and titrated with 0.1M Potassium hydroxide solution n = Number of ml of 0.1M KOH w = Wt. of oil

5. Specific Gravity

Specific gravity of the prepared oil was determined using specific gravity bottle.

6. Stability Study

It is performed by keeping the prepared herbal hair oil in a closed container at cooled and dry place 20.

II. RESULT

1. OrganolepticProperty

Table No.8

Formulation	Colour	Sensitivity	Grittiness	Sedimentation
F4	Dark Greenish Brown	No Irritation	Smooth	No Sedimentation

2. pH Determination

Table No.9

Formulatin	PH Value
F4	5.9

3. Viscosity Determination**Table No.10**

Formulation	Viscosity (centipoise)
F4	0.92

4. Acid Value**Table No.11**

Formulation	Acid Value
F4	5.2

5. Specific Gravity**Table No.12**

Formulation	Specific Gravity
F4	1.09

6. Stability Test

It is observed that the prepared five formulations are stable throughout the shelf life for 3 months.

SR.NO	Colour	Sensitivity	Grittiness	Sedimentation	pH value	Viscosity	Acid Value	Specific gravity
F1	Dark greenish brown	No irritation	Smooth	No	6.2	0.94	5.2	1.01

III. SUMMERY

Herbal hair oil is more preferred and is used in many ailments of hair. They **promote hair growth, improve elegance of hair and prevent hair fall**. It not only promotes hair growth they also provide necessary moisture to the scalp rendering in beautiful hair. Herbal hair oils are natural oil products with essential properties to treat hair problems like thinning of hair and dry or flaky scalp. These oils are used not only for **moisturizing purposes** but also to promote hair growth, improve circulation of blood in the scalp, prevent dandruff and add volume to the hair shaft.

IV. CONCLUSION

The utilization of herbal hair oil in the 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 is having different benefits with good combination will give the great effect for hair. The herbal extracts and constituents chosen for the formulation of hair oil were reported to have hair growth, relaxation, anti-dandruff, hair thickening, and hair fall control properties, which when used together elicited a synergistic effect in promoting healthy and shiny hair growth. The formulation was proven to be safe for human use. Because values of evaluation parameters of our formulation show similar results as standard values hence it is concluded that the oil is beneficial in maintaining good hair growth of the hair turning grey hair to black providing protection from dandruff and results lustrous looking hairs. The formulated hair oil will help in maintaining good growth of hair, not only that it also provides turning grey hair to black, protects from dandruff, reduces stress etc. It provides various essential nutrients required to maintain normal function of sebaceous glands and promotes natural hair growth. Formulation was done and evaluated by means of various parameters like pH, organoleptic properties (colour, odour, sensitivity, sedimentation) acid value, viscosity, specific gravity, and stability test. At last, it can be concluded that the herbal hair oil formulations have significant quality.

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