

Design Development and Evaluation of Polyherbal Hair Oil Formulation for Hair Growth and Dandruff Remove

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Abstract: *The concept of beauty is an ancient as mankind and civilization so, they use various beauty products that have herb to look charming and young. Herbal cosmetics are now-a-days widely used by common people because of concept of fewer side effect and with a better safety and security profile. The present work was aimed to formulate lemon grass hair oil for general purpose [application in hairs] using various herbs. The formulated hair oil was evaluated. Various parameters such as viscosity, saponification value, pH etc. were determined and reported in this paper.*

Keywords: Hair oil, Cymbopogon citratus, PH, Saponification value, Acid value, specific gravity etc

I. INTRODUCTION

Lemongrass popularly known as citronella grass is the member of poaceae family and belongs to the genus Cymbopogon. A strong lemongrass predominant features of this grass, is due to high citral content in its oil. The redolence of the oil enables its use in soap, detergent, and perfumes. It also finds an application in the pharmaceutical industry apart from the nutrients such as fat, protein, fibre and minerals. It also contains various bioactive compounds which may be grouped into alkaloids, phenol, saponin and tannin. According to WHO, herbal medicine is considered an important part of healthcare industry by more than 'two-third population of countries'. [1] Now a days hair care beauty is delivered with herbs, and they're well recognized as compared with artificial ones. Those years, a part of the hair care out inside the use of hair oil has been increasing and it's far because of their advantages in addressing the hair issues. Hair oils are formulated with each synthetic and natural component. Artificial hair oils are those hair care merchandise which might be made by means of chemical or synthetic substances. They're used to offer shine and notable conditioning and they also help to reduce frizz. Hair has several useful characteristics in the animal global. It forms a defensive cushion around the pinnacle & other sensitive elements of the frame. Hair oils are formulated to present the hair properly shine & gloss this is obtained by making use of a thin continuous movie of an oily material on the hair surface without causing stickiness. Many herbs are used in hair oil are Amla, Almond, Hibiscus, and so on. Hair oil has extra favoured as they promote hair growth. Enhance beauty of hair & prevent hair fall. Hair oil are hair care products. Hair care merchandise is defined as the formulations which might be used for the reason of cleaning, editing the hair texture, providing nourishment to the hair, and retaining the healthful appearance of hair. Hair oil are hair care components implemented to the hair for the treatment of hair disorder which include baldness, greying of hair, hair fall, dry hair and also allows in providing nourishment to hair. Herbal cosmetics are excessive in demand because of increasing hobby of mankind closer to them additionally natural cosmetics are more effective with negligible facet consequences and components are without problems to be had. Natural hair oil is a critical part of natural cosmetics. Natural hair oil is greater desired and used in lots of ailments of hair. They are now not most effective. Sell hair boom however additionally offer vital moisture to the scalp rendering in stunning hair. Herbal oil which incorporates herbal pills are referred to as hair tonic. Natural hair oil gives some of vital nutrient which can be important



to keep the normal function of sebaceous gland and promote natural boom of hair. those are one of the maximum. properly identified product for the treatment of hair. using hair oil is growing every day in step with the development in preferred of dwelling of human beings to present herbal flavours and colourings to hair oil the herbal essences and perfumes are introduced. [2]

Taxonomical classification

Kingdom	Plantae
Division	Magnoliophyta
Class	Liliopsida
Order	Poales
Family	Poaceae
Genus	Poaceae
Species	citrates

Aim

To Formulate And Evaluate The Polyherbal Hair Oil.

Objectives

To Promote The Hair Growth And Smoothness Of The Hair.

To Supplement The Hair With Vital Nutrients Such As Vitamins, And Minerals. To Prevent The Dandruff, Spit Ends, And Dull Hair.

To Provide An Alternative Source From Hazardous Chemicals. [3]

Benefits of lemongrass

- Strengthen of hair follicles.
- Thickens your hair.
- Shine your hair naturally.
- Combats hair loss.
- Eliminates dandruff.
- A rich source of iron, lemongrass assists in treating condition such as, Anaemia or other iron deficiencies which can lead to hair loss. [4]



lemongrass



LITERATURE REVIEW

2.1 Grace, X. Fatima, et al. (2014)

They targeted Humanity employs a wide range of goods to enhance grace and beauty in an effort to seem charming and young. Cosmetics are thus necessary for human survival. These days, herbal cosmetics are widely used because it is widely believed that they are safer and have less side effects. One of the main body elements that serves as a protective appendage is hair.

2.2 Kumar, K. Sudheer, et al. (2016)

The Studied As opposed to synthetic formulations, herbal remedies always work and have fewer or no negative effects. Each growth activity has a concentration range of 1–10%. The findings indicate that a combination of unrefined medicinal substances, comprising fruits using the boiling cloth method, and its ability to promote hair development as well as their acidity, saponification value, and refractive index were evaluated.

2.3 Jhadav, Amitkumar K, et al. (2018)

They proved Since the dawn of human society, beauty and cosmetics have existed. So, in an attempt to appear young and appealing, people utilise a range of beauty products laced with herbs. Today's general public utilises herbal cosmetics extensively since they are thought to have a superior safety and security profile and fewer adverse effects.

2.4 Yamani, N. S., K. Pratyusha, et al. (2018)

They Targeted Herbal remedies are recognised for their improved efficacy because of their lengthy history of use and minimal possibility for side effects. The problems that these oils are intended to treat include hair loss and dry or flaky scalp.

2.5 Kolhe, Shilpa, et al. (2019)

They studied Because they have higher safety and security and fewer negative effects, herbal cosmetics are increasingly frequently used. Producing a multipurpose polyherbal hair oil using a range of herbs was the aim of the current project. Herbal hair oil was created using hair growth.

2.6 Kuber, B. Ramya, et al. (2019)

They proved Herbs are a fundamental component of the Ayurvedic medical system. Herbs are utilised not only for medicinal purposes but also for physical beautifying, including the creation of different hues and cosmetics. The creation of polyherbal hair oil from fresh leaves of several plants is the goal of the current investigation. The produced herbal oils underwent physical and biological evaluation, general characterisation, and phytochemical screening.

2.7 shubham Gorakhnath, Mr Ghodke, et al. (2021)

They studied the many goods that accentuate grace and attractiveness to appear elegant and youthful. Consequently, cosmetics are essential to human existence. Because of the widespread belief that herbal cosmetics are These days, they are widely used because they are safer and have less negative effects. Hair is one of the vital body components that acts as a protective appendage.

2.8 Jayavarapu, Kumar Raja, et al. (2024)

They proved Comparing herbal formulations to synthetic ones, there are always fewer or no negative effects [23]. Creating herbal hair oil with substances such as The following ingredients are included in the study: curry, guava, papaya, methi, jatamansi, hibiscus, bhringraj, raw garlic, muskmelon seeds, moringa, curry, guava, papaya, and spring onions. Based on the aforementioned findings, a combination of unrefined medications was made by boiling and then packaged as herbal hair oil [24]. as the criteria for specific gravity, pH, acidity, saponification, and viscosity, which are suitably determined.

PLAN OF WORK

Literature survey

Collection of herbs

Formulation of herbal oil

Evaluation of herbal oil

1. Acid Value

2. Saponification value

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DOI: 10.48175/IJAR SCT-27356



3. Specific gravity
4. Viscosity
5. pH value

Herbs Used in a Lemongrass Hair Oil

1. Neem Azadirachta indica (Meliaceae)

Neem, known for its medicinal properties is an effective herb to treat hair loss. Due to its antibacterial, antifungal and anti-inflammatory properties, neem is an excellent way to combat dandruff. It helps the hair follicle to become stronger and also encourages hair growth.

Biological source: It consists of fresh leaves of the plant known as Azadirachta indica.

Synonyms: Hindi-nim, Malayalam-Veppa. [5]



Neem Azadirachta indica

2. Amla

Emblica officinalis (Euphorbiaceae)

Emblica officinalis is rich in vitamin C, tannins and minerals such as phosphorus, iron, calcium which provides nutrition to hair and also causes darkening of hair. [6]

Chemical constituents:

Lkalooids (Phyllantidine, phyllantine), vitamin C, Gallotannin (5%), Carbohydrates (14%), Lecture, Minerals, Phenolic acid, Gallic acid, Ellagic acid, Emblicol, Amino acid (Alanine, aspartic acid, Lysine, proline). Biological source:

Dried as well as fresh fruit of the plant Emblica Officinalis. [7]

Synonym:

Emblica, Amla.



Amla



3. pudina

Mint (Labiatae)

Mint is rich in natural antimicrobial and anti fungal properties, which treat many scalp issues, especially dandruff.

It prevents growth of any unwanted bacteria or infection as well on the scalp. [8]

Biological source :

It consists of dried leaves.

Synonyms: Pudina.



pudina

3. Shatavari *Asparagus racemosus* (Asparagus)

Shatavari is anti-inflammatory and thus helps to soothe the scalp. This way, no inflammation due to skin irritation occurs, and this helps promote hair growth. Shatavari is an apolagenic herb, thus it helps your body cope with physical and emotional stress. Stress is a main cause of hair loss. [9]

Biological source :

It consists of dried roots and leaves of the plant.

Synonyms : Shatmuli



Shatavari

5 Kapur (camphor)

Cinnamomum camphora (Lauraceae)

It has anti-fungal properties as well as anti-inflammatory properties which can remove dandruff. Camphor helps disinfect your hair.

If you have been struggling with hair lice, camphor can work magic on your hair and kill all lice and clean your head. [10, 11]

Synonyms : camphora.





Cinnamomum camphora (Lauraceae)

6. Brahmi

Bacopa monnieri (Scrophulariaceae)

Bacopa monnieri is small herb with purple flower. It grows in wet and Sandy areas and near the stream in tropical regions. It is creeping herb with numerous branches and small fleshy, flowers and fruits appears in summer. The stem and leaves of the Plant are used in figure[12]

Whole plant.

Chemical constituents:

Alkaloids (Brahmin, Herpestin), saponins (Monnieri, Hersaponin), betulinic acid, etc.

Biological source :

It consist of fresh leaves and stem of the plant known as *Bacopa monnieri*.

Synonym :



Brahmi *Bacopa*



7. Til oil *Sesamum indicum* (Pedaliaceae)

Sesame oil for hair promote good scalp health and encourages hair growth. Sesame oil has vitamin E, B complex and minerals such as calcium, magnesium, phosphorus and protein that strengthens hair from the root and deeply nourishes.[13]



Biological source :

It is fixed oil obtained from the seeds of *Sesamum indicum*.

Synonyms : Teel oil.

Material And Methods

Collection of plant part

For the preparation of lemongrass hair oil various plant material were collected Viz, Lemongrass, Neem, Amla, Pudina, Coconut oil, Shatavari, Kapur, Brahmi, Til oil etc.

Formulation of lemongrass hair oil

The various ingredients used in the formulation of lemongrass hair oil in table 1. Accurately weigh dried leaves and stalks of lemongrass and other herbs such as, Neem, Amla, Pudina, Shatavari, Kapur and Brahmi were grinded in the mixture and was mixed in 2ml of til oil. The above content was boiled for 15 min. and was filtered through muslin cloth. To the filtrate coconut oil was added to make up the volume. Finally small amount of color and flavouring agent was added to the oil and it was placed in amber colored bottle.[14]

Table 1: Ingredients used in lemongrass hair oil

Sr No.	Ingredients	Quantity
1	Lemongrass Powder	1 gm
2	Neem Powder	2 gm
3	Amla powder	1 gm
4	Pudina powder	1 gm
5	Shatavari powder.	1 gm
6	Kapur powder	1 gm
7	Brahmi powder	2 gm
8	Til oil	2 ml



Evaluation of lemongrass hair oil

The formulated lemongrass hair oil was subjected to physical and biological evaluation.

Sensitivity test

The prepared lemongrass hair oil was applied on 1 cm skin of hand and exposed to sunlight for 4-5 min. Acid value preparation of 0.1 molar solution : weighed 0.56g KOH pellets and dissolved in 100 ml of distilled water and stirred continuously. The prepared 0.1 molar KOH solution was filled in a burette. Preparation of sample: Measured 10ml oil and dissolved in 25ml of ethanol and 25ml of ether mixture and shaken. Added 1ml of phenolphthalein solution and titrated with 0.1 molar KOH solution] Saponification value

Accurately weighed 1ml of oil into a 250ml of conical flask and 10 ml of ethanol:ether mixture[2:1] was added . To this flask 25ml of 0.5mL of 0.5 N alcoholic KOH was kept the flask for 30 min. and the flask was cooled. The cooled solution was titrated against 0.5 N HCL using phenolphthalein indicator. Similarly the blank titration was performed without taking oil [sample]

Amount of KOH in mg used in calculated [15]

PH

The PH lemongrass hair oil was determined using PH meter.

Viscosity

The viscosity was determined using ostwalds viscometer.

Specific gravity

Take the specific gravity bottle, rinsed it with distilled water, dry it in oven for 15 minutes , cool, closed it with cap and weight it. Now fill the same specific gravity bottle with the sample and closed it with cap and again weigh it . Determine the weight of sample per millimeter by subtracting the weight

Physical appearance:

The color and odor of the oil can be evaluated manually. pH: A pH meter can be used to determine the pH of the oil.

Viscosity: A viscometer can be used to measure the viscosity of the oil at room temperature. Refractive index: A refractometer can be used to determine the refractive index of the oil.

Saponification value: A conical flask can be used to determine the saponification value of the oil. [16]

Table2: Role of herbs in lemongrass hair oil

Sr.No.	Ingredients	Importance
1	Lemongrass	Antibacterial activity
2	Neem	Antimicrobial
3	Amla	Hair growth
4	Pudina	Flavouring agent
5	Shatavari	Hair growth
6	Kapur	Stimulating agent
7	Brahmi	Nervine tonic
8	Til oil	Vehicle



Table3. Evaluation of lemongrass hair oil :

Evaluation parameter	Inference
Sensitivity test	Non sensitivity
Irritant test	Non irritant
PH	6.4
Specific gravity	0.95
Saponification value	196.05
Acid value	4.6
Colour	Yellowish brown
odour	Aromatic

Result :

The formulation and evaluation of polyherbal hair oil using Lemongrass Powder, Neem Powder, Amla powder, Pudina powder, Shatavari powder, Kapur powder, Brahmi powder, Til oil was prepared. The various parameters like color, odour, irritation test, sensitivity test, viscosity, pH of herbal hair oil was evaluated.

II. CONCLUSION

Lemongrass hair oil provides numerous essential nutrients required to maintain normal function of subcutaneous glands and promotes natural hair growth. Hair oil is one of the most well-organized hair treatments. The lemongrass hair oil prepared from various herbs given in table. The various parameters like sensitivity test, viscosity, pH, irritation test, saponification value and acid value of lemongrass hair oil were evaluated. Then use of bioactive ingredients in cosmetic formulation has a valuable effect on body features and provides nutrients which are essential for maintaining healthy and beautiful hairs. At least it can be concluded that this lemongrass hair oil formulation has significant quality.

REFERENCES

1. Banerjee, P.S., Sharma, M., Nema, R.K. 2009. Preparation, evaluation and hair growth stimulating activity of herbal hair oil. *Journal of Chemical and Pharmaceutical Research*, 1(1):261-267.
2. Mithal, B.M., Shah, R.N. 2000. *A Hand Book of Cosmetics*. 1st Edition, 141-142.
3. Singh, R.M. 1996. *Indian Pharmacopoeia*. Government of India, Ministry of Health and Family Welfare, Published by, The Controller of Publication, Edition, Vol. II.
4. Arakawa T, Emoto K, Utsunomiya S, Hagiwara Y, Shimi-zu T. Effect of Swertinogen in hair growth with special reference to its activities on skin function. *J Exp Med* 1962; 9:37– 59.
5. Adhirajan N, Ravi Kumar T, Shanmugasundaram N, Babu M. In vivo and in vitro of hair growth potential of *Hibiscus rosasinensis*, Linn. *J Ethnopharmacol* 2003; 88:235– 9.
6. Han A, Mirmirani P. Clinical approach to the patient with alopecia. *Semin Cutan Med Surg* 2006; 25:11–23.
7. Bagatell C, Bremner WJ. Androgens in men – uses and abuses. *W Med* 1996; 334:707– 15.
8. Olsen EA. Androgenetic alopecia. In: EA Olsen, ed. *Dis-orders of Hair Growth: Diagnosis and Treatment*. New York: McGraw Hill, Inc; 1993: 257–87.
9. Takahashi T, Kamiya T, Yokoo Y. Proanthocyanidins from grape seeds promote proliferation of mouse hair follicle cells in vitro and convert hair cycle in vivo. *Ac-ta Derm Venereol* 1998; 78:428–32.
10. Adhirajan N, Dixit VK, Gowri C. Development and evaluation of herbal formulations for hair growth. *Indian Drugs* 1999; 38:559–63.
11. Roy RK, Thakur M, Dixit VK. Effect of *Cuscuta reflexa* Roxb, On hair growth in albino rats. *Indian Drugs* 2006; 43 (12): 951–6.
12. Lipi, P., Suryaprakash, B. N., & Pande, M. S., Development and evaluation Of herbal formulation of hair growth, *E-journal Of chemistry*, vol-5, No. 1 Jan 2008, 34- 38.



13. Daniel, M., Medicinal Plants Chemistry and Properties, Oxford and IBH Co. Pvt. Ltd., New Delhi, 2006: 123.
14. Kokate C K, Purohit A P and Gokhale S B, In; Pharmacognosy, 19th Ed., Nirali Prakashan, Pune, 2002,
15. S. L. Deore, S.S Khadabadi, B. A baviskar Pharmacognosy and phytochemistry, a comprehensive approach, Pharmamed Pres a unit of BSP books pvt. Ltd. printed on, 2014; 619. . Adhirajan N, Ravi Kumar T, Shanmugasundaram.
16. N. Babu M, In vivo and in vitro evaluation of hair growth potential of Hibiscus rosa-sinensis Linn J Ethnopharmacol, 2003; 88(2-3): 235-9

