

Preparation and Evaluation of Herbal Hair Oil

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Abstract: Pharmacognosy is the branch of pharmacy that deals with herbs. This medicinal plants are utilized for preparing and manufacturing myriads of medicines. Beside this, herbs are used for beautification of body, preparation of cosmetics, flavouring and colouring agent. The main aim of present study involves preparation and evaluation of herbal hair oil by using fresh parts of various plants. The prepared herbal hair oilre subjected to phytochemicals screening, general characterization, physical, chemicals testing. The herbal oil were prepared according to Indian pharmacopoeia standard. The formulation consists of the herb such as bulb of *Allium cepa*, seeds of *Trigonellafoenum-graecum* and *Nigella sativa*, fruit of *Phyllanthus emblica* and *Cucumis sativus*, leaves of *Brassica oleracea*, rhizome of *Zingiberofficinale*. The evaluation of formulated herbal hair oil were carried out by various parameters such as organoleptic characters, phytochemicals screening, physical features as viscosity, pH, acid value, saponification value, refractive index, specific gravity. It is also tested for skin irritation on forearm. In addition, it is assessed for stability study. Above all the parameters where studied and found that all are in acceptable limit. In conclusion, the prepared herbal hair oil is utilized to promote hair growth, for supplementation of vitamins and minerals, preventing dandruff, split ends and alternative choice from hazardous chemicals.

Keywords: Hair, Herbal oil, Stability studies

1. Introduction

Pharmacognosy, the branch of knowledge concerned with the medicinal drugs obtained from plants or other natural sources. It deals with the naturally occurring constituents which have medicinal activities. In Indian systems of medicine the drugs may be from plant sources, animal sources or of mineral origin which are used in natural or so called "Crude" form either singly or in combination to make compound formulations. Pharmacognosy has a close relation with Ayurveda, as both deals with the medicinal plants.

The term Ayurveda in Sanskrit consists of two words; *ayur* meaning life, and *veda* meaning sacred knowledge or science. Thus, Ayurveda is the science of life. In Ayurvedic medicine, herbs are used as an integral part of health care system. The synthetic chemical compounds have replaced many Ayurvedic plant products, the safety and efficacy of the natural products could not find suitable match. Herbal drugs obtained from plants are believed to be much safer in the treatment of various diseases. Moreover, it is also utilized in formulation of cosmetics, textile and food industries.

Hair is a protein filament that grows from follicles found in the dermis. Hair is one of the defining characteristics of mammals. Most common interest in hair is focused on hair growth, hair types and hair care, but hair is also an important biomaterial primarily composed of protein, notably alpha-keratin. The prominent problems arises with in cosmetics are Dandruff, hair loss, dry hair, spit ends, frizzy hair, dull hair, heat damaged hair, color damaged hair, grey hair, etc. To overcome these problems there are many cosmetics available in markets, such as hair oils, hair shampoos, hair conditioners, hair serums, hairs gels, hair mask, hair dyes.

Hair oils are the cosmetics products which are applied on hair which promotes the luxurious hair growth, treatment of baldness, aggression of hair. Hair oil containing herbal drugs are used as hair tonic. Hair care products are categorized

into two main category, hair tonics and hair grooming aids. These are basically the extracts of medicinal plants in an oil base.

Aim

The main aim of our projectis to formulate and evaluate the herbal hair oil.

Objectives

- To promote the hair growth and smoothness that is required for beautifying and attraction of the hair.
- To supplement the hair with vital nutrients such as vitamins, and minerals.
- To prevent hair from damage and loss caused by pollution.
- To prevent the dandruff, spit ends, and dull hair.
- To provide an alternative source from hazardous chemicals.

2. Experimental Section

2.1 Plants Materials

The plants selected for preparation of herbal hair oil are bulb of *Allium cepa*,rhizomes of *Zingiberofficinale*, fruit of *Cucumis sativus*, crop of *Brassica oleracea*, seeds of *Trigonellafoenum-graecum*, *Phyllanthus emblica*, and seeds of *Nigella sativa*.

Allium cepa:

The *Allium cepa* also known as the bulb onion or common onion, it is a vegetable that is the most widely cultivated species of the genus *Allium* belongs to family *Amaryllidaceae*. The part used are the bulbs which contain several components with therapeutic benefits such as sulfur for hair growth, the fructan responsible for its diuretic effect. It also contains potassium salts and flavonoids that transferred anti-inflammatory properties. In addition, onion also shows action on cardio-circulatory system as

protector of the small vessels. Prevents thrombosis and reduces blood cholesterol.



Zingiberofficinale:

The Zingiberofficinale is also known Common Ginger, Cooking Ginger, Canton ginger; Stem Ginger belongs to family Zingiberaceae. It is used as source of sulfur for hair growth, also used as stomachic, stimulant, aromatic, carminative, as a spice, used in mouth washes, ginger beverages and liquors, Flavoring agent and also in motion sickness.



Cucumis sativus:

The Cucumis sativus is alsoknown as cucumber, cucurbits, creeping vine belongs to family Cucurbitaceae. It is used to promotes hair growth, cucumber juice is extremely good for your hair, used as a rich source of silicon and sulphur which collectively stop hair fall, and promote healthy hair. Also used to promotes hydration, antioxidant, lowers blood pressure, helps in weight loss, etc.



Brassica oleracea:

The Brassica oleracea is also known as cabbage, leaf cabbage, kobi, band kobi belongs to family Brassicaceae or Cruciferae. It is used as rich source of sulfur and vitamin C. It is used in treatment of hair growth, glaucoma, pneumonia and cancer. It is also used as mild laxative and as an anti-inflammatory agent.



Trigonellafoenum-graecum

The Trigonellafoenum-graecum is also known as fenugreek seeds belongs to family Fabaceae. It is used as herb, spices and vegetable. Its main extensive use in hair regrowth. It is also used in preparation of pickles and food. Its also used as flavouring agent.



Phyllanthus emblica:

Phyllanthus emblica is also known as emlic, emblicmyrobalan, myrobalan, Indian gooseberry, malacca tree, amla, amalaka belongs to family Phyllanthaceae. Amla is excellent source of vitamin C, helps to boost your immunity, metabolism and prevents bacterial and viral ailments, including cold and cough. Also used as anticancer. It strengthen the scalp and hair, reduces premature pigment loss from hair or greying. It als prevent or treat dandruff and dry scalp.



Nigella sativa:

Nigella sativa is also known as black caraway, black cumin, nigella, kalojeera, kalonji belongs to family Ranunculaceae. It is highly used for hair care products. It is sometimes used to treat certain health conditions including asthma,

bronchitis, and inflammation, and has long been used as a spice and food preservatives.



2.2 Oily Material

The oils used are Cocos nucifera oil, Olea europaea oil, Ricinus communis oil.



Cocos nucifera oil:

Cocos nucifera oil is also known as coconut oil, copra oil belongs to family Arecaceae. It is used moisturizes the hair, avoid breakage of hair, blood flow and blood circulation, antibacterial agent.

Olea europaea oil:

Olea europaea oil is also known as Olive oil belongs to family Oleaceae. It is used in the formulation of a wide variety of product types, including bath products, bath soaps, and detergents, cleansing products, depilatories, makeup, hair conditioners, shampoos, skin care products, shaving products, personal cleanliness products, and suntan products.



Ricinus communis oil

Ricinus communis oil also known as castor oil, castor bean oil belongs to family Euphorbiaceae. It is used as hair fall controller, encourage hair regrowth, darkens the hair, thickens the hair, treats dandruff. It is also used as powerful laxative, reduce acne.



The above materials were selected because there was no hair oil prepared with these herbs.

3. Materials and Methods

The herbal hair oil was prepared by collecting and using various plant materials. These are bulb of Allium cepa, rhizomes of Zingiberofficinale, fruit of Cucumis sativus, crop of Brassica oleracea, seeds of Trigonellafoenum-graecum, Phyllanthus emblica, and seeds of Nigella sativa. All were collected from Agricultural fields. Collected plants were identified by my project guide Prof. Sagar Jadhav.

The oils used for herbal hair oils were Cocos nucifera oil, Olea europaea oil, Ricinus communis oil. This all oils was purchased by Moksha from New Delhi. All the collected oils were identified by project guide.

Solvents and Chemicals:

All the solvents and chemicals were analytical grade.

Chemicals used were potassium chloride, ascorbic acid, sodium nitroprusside, sodium hydroxide, sodium bicarbonate, ferrous sulphate.

Solvents used were ethanol, Hydrochloric acid, sulphuric acid, water, phenolphthalein indicator.

The above chemicals and solvent were obtained from department of pharmaceuticals technology, D.S.K.C.O.P. Kasbedigraj Sangli.

Formula

Ingredients	Quantity
Allium cepa	12g
Zingiberofficinale	1.5g
Cucumis sativus	11g
Brassica oleracea	11g
Trigonellafoenum-graecum	3g
Phyllanthus emblica	15g
Nigella sativa	3g
Ricinus communis oil	3ml
Olea europaea oil	3ml
Cocos nucifera oil	15ml

4. Procedure

Herbal hair oil was prepared by boiling all the prescribed herb according to the formula. This process ensures

adsorption of the active therapeutic properties of the ingredients used.

Methods of preparation

- 1) Herbs are weight by using weighing balance whereas, oils are measured through pipette.
- 2) The oils and herbs are mixed together in a vessel.
- 3) The above mixture is then allowed to boil on low flame with continuous stirring. So, as to avoid the adherence of the medicinal plants to the bottom of the vessel.
- 4) At this step moisture of the medicinal plant commenced to evaporate so it is agitated frequently and carefully to ensure that the mixture does not stick at the bottom of vessel.
- 5) The herbs are taken out from time to time to know the condition and stage of mixture of oils.
- 6) As further heating to the content, the oil starts to form a froth. This is the condition where all the active ingredients of medicinal plants starts to concentrate in oil.
- 7) In the next step, the mixture is filtered through muslin cloth.
- 8) The collected strain is final herbal hair oil product.

Evaluation of Herbal Hair Oil Preparation

The prepared herbal hair oil was subjected to phytochemical screening, general characterization, physical and biological evaluation.

Phytochemical screening of herbal hair oil preparation:

The prepared herbal oil was subjected to qualitative chemical analysis for identification of various plant chief constituents like sulphur, ascorbic acid and saponins by using different methods.

Ascorbic acid test:

Dilute 1ml of 2 percent w/v solution with 5ml of water and add 1 drop of freshly prepared 5 percent w/v solution of sodium nitroprusside and 2ml of dilute sodium hydroxide solution. Add 0.6ml of hydrochloric acid dropwise, stir and note the observation.

Sulphur test:

Spray or place a drop of hydrogen peroxide on the test paper. The paper changes its colour to brown when exposed to fumes.

Saponin test:

Oil mixed with water in a test tube shaken to form a stable froth.

General characterization:

The general characters like colour and odour was evaluated manually.

Physical evaluation:

The physical evaluation parameters were determined are specific gravity, pH, viscosity, refractive index, acid value and saponification value.

Anti-microbial evaluation (antidandruff activity) Cup plate method:

Diffusion dependent antimicrobial activity of the herbal hair oil was studied by the zone of inhibition method. The plate was incubated at 37 °C for 2 days. The zone of inhibition was measured.

Antioxidant activity:

DPPH radical scavenging test:

One ml of oil solutions (20, 30, 40, 50 and 60 µg/ml. in acetone) was added to one ml of DPPH solution (0.2mM in acetone). After a 30 min of reaction at room temperature, the absorbance of the solution was measured at 517nm. The Antioxidant activity of the oil is measured against ascorbic acid as standard.

Primary skin irritation test:

The prepared formulation was assessed for primary skin irritation test on our forearm, little amount was applied on the test site. The test site was observed for erythema and edema for 3 to 4 hrs.

Stability studies:

Prepared herbal hair oil was observed for stability condition. The herbal hair oil was kept aside and observed for 1, 2, 4 and 6 months intervals. In addition, saponification value and acid value was measured after a specific period of time for stability purpose.

5. Results and Discussion

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. The herbal hair oil was prepared from the above mentioned ingredients and it was subjected to the qualitative chemical analysis for identification of various plant constituents. The various parameters like Colour, Odour, Specific gravity (density), pH, Viscosity, Saponification value, Acid value, Refractive index and irritation test of herbal hair oil was evaluated.

Anti-dandruff activity was carried out by measuring the zone of inhibition of herbal hair oil. Hair oil showed good activity.

Phytochemical Evaluation of Herbal Hair Oil

Test	Observation	Results
Ascorbic acid test	Yellow colour turns blue	Ascorbic acid present and confirmed
Sulphur Test	Brown	Sulphur is present and confirmed
Saponin test	Foam gets appeared	Saponin present and confirmed

Physical Evaluation of Herbal Hair Oil

<i>Parameters</i>	<i>Results</i>
Colour	Brown
Odour	Characteristic
Specific gravity	0.845
pH	5.67
Viscosity	0.00532
Acid value	2.58
Saponification value	199.15
Refractive index	1.530
Skin irritation	No irritation

6. Conclusion

Overall, the formulated herbal oil provides many nourishing value to hair such as vitamins, minerals, and essential oils. The finished product is within the limits. In conclusion, oil is beneficial to prevent hair from damage and loss caused by pollution and dull hair. And provide an alternative source from hazardous chemicals.

References

- [1] Indian Pharmacopeia 2007
- [2] B. Ramya Kuber, Ch. Lavanya, Ch. Naga Haritha, S. Preethi, G. Rosa, Preparation and evaluation of poly herbal hair, Journal of Drug Delivery and Therapeutics, 2019.
- [3] Dr. K.R. Kandelwal and Dr. Varun Sethi, Practical Pharmacognosy, Nirali Publication.
- [4] Kokate C.K, Purohit A. P, Gokhale S. B, Pharmacognosy, Nirali Publications, 2008.
- [5] Pharmacognosy and Phytochemistry Volume 1, Third Edition by Vinod Rangari, Career Publication.
- [6] Dhananjaya J Despande, A handbook of Herbal Remedies published by Agrobios (India), 2008.
- [7] X. Fatima Grace, S. Rahul Raj, S. Shanmughanthan, D. Chamundeeshwari, Preparation and Evaluation Poly herbal hair oil, International Journal Of Pharmaceutical Chemistry and Analysis.
- [8] LipiPurwal, Surya Prakash B.N Gupta and Milind. S. Pande, Development and Evaluation Of herbal formulation for hair growth, E-Journal of Chemistry, Jan 2008, Vol 5, No-1, 34-38.