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Preparation and Evaluation of Polyherbal Hair Oil: An Effective Cosmetic

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ABSTRACT:This research paper is about the preparation and evaluation of Polyherbal hair oil using various plant materials Such as Amla,Hibiscus,Neem,Indigo,Bringhraj,Camphor, Fenugreek,Coconut oil,Aloe vera, andRosemary Oil. Herbal cosmetics are now-a-days widely used by the common people because of concept of fewer side effects and with a better safety and security profile.The prepared polyherbal hair oil evaluated different parameters such as Specific gravity,PH,Organoleptic properties,Sensitivity test,Saponification value,Acid value,Viscosity, and Phytochemical screening. The primary skin irritation test is carried out. Hence,polyherbal hair oil considered to increase the hair growth,reduces hair loss, and providing protection against dandruff.

KEYWORDS: Hair, Amla, Indian indigo, Phytochemical screening, Hair growth, Hair loss.

I. INTRODUCTION

Hair oils are widely used in India for hair care.indigenously available herbal ingredients are used to make hair oil. However nowadays, synthetic products are also used as perfume and coloring of hair oils. Traditionally hair oils are made from vegetable oils such as sesame seed oil, castor oil, coconut oil etc. But now petroleum white oils are used in the formulation of hair oil to reduce cost and improve product quality.Hair is present on most skin surfaces except the palms, palmar surface of the fingers, soles and plantar surfaces of the feet. In adults hair usually seen in the scalp, in the eyebrows, in the axillae (armpits) and around the external genitalia .Genetic and hormonal influences largely determine hair thickness and the pattern of distribution.Each hair follicle goes through a growth cycle, which consists of a growth stage and a resting stage. During the growth stage, cells of the matrix differentiate, keratinize, and die. This process forms the root sheath and hair shaft. As new cells are added at the base of the hair root, the hair grows longer. In time, the growth of the hair stops and the resting stage begins. After the resting stage, a new growth cycle begins. The old hair root falls out or is pushed out of the hair follicle, and a new hair begins to grow in its place. Scalp hair grows for 2 to 6 years and rests for about 3 months. At any time, about 75% of scalp hairs are in the growth stage, visible hair is dead, but until the hair is pushed out of its follicle by a new hair, portions of its root within the scalp are alive.Normal hair loss in the adult scalp is about 100 hairs per day. Both the rate of growth and the replacement cycle may be altered by illness, radiation therapy, chemotherapy, age, genetics, gender, and severe emotional stress. Rapid weight loss diets that severely restrict calories or protein increase hair loss. The rate of shedding also increases for 3 to 4 months after child birth. Alopecia, the partial or complete lack of hair, may result from genetic factors, aging, endocrine disorders, chemotherapy for cancer, or skin disease. [4, 5]Herbal cosmetics are in high demand due to increasing interest of mankind towards them because they are more effective with nil or less side effects, easily available ingredients etc. Hare care cosmetics are now added with herbs and they are well recognised compared with synthetic ones. [7] Herbal hair oil is more preferred and is used in many ailments of hair. They promote hair growth, improve the elegance of hair and prevent hair fall. Hair oil not only promotes hair growth, they also provide necessary moisture to the scalp rendering beautiful hair.Hair oils are the hair care preparations used for the prevention and treatment of baldness or other ailments, aggression of hair. They also promote the luxurious growth of hairs. Hair oil containing

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herbal drugs are used as hair tonic. Hair care products are categorized into two main categories, hair tonics and hair grooming aids. These are basically the extracts of medicinal plants in an oil base. A plethora of herbs have been employed for hair treatments. A few of these herbs are amla, henna, neem, methi, lemon, tulsi, brahmi, shikakai, reetha, liquorice root, musk root, mahabhringraj, jantamasi, marigold, hibiscus, nutmeg, parsley, rosemary[9,10].

II.MATERIALS AND METHODS

COLLECTION OF PLANT MATERIALS:

The polyherbal hair oil was prepared by collecting various plant materials such as Amla, Hibiscus, Neem, Indigo, Bringhraj, Camphor, Fenugreek, Coconut oil, Aloe vera, RoseMary oil. Where procured from natural sources. Ingredients as follows:

Figure 4.1

It is obtained from Dried and fresh fruit of Phyllanthusemblica. It is also known as Indian gooseberry, Amla, Amalaka belongs to the family phyllanthaceae. It is a good source of vitamin C that helps to boost your immunity. It also helps for strengthening the scalp and hair and reduces premature pigment loss from hair graying. It also prevents or treats dandruff, and dry scalp. It is used for various hair care products. [12, 13, 14]

2. ALOEVERA [15]

Figure 4.2

It is obtained from the Dried or fresh latex of leaves of aloe vera belonging to the family Liliaceae. Aloe vera pulp subsumes proteolytic enzymes which repairs dead skin cells on the scalp. It is used as a good conditioner and imparts smooth and shiny. It bolsters hair growth, reduces dandruff and itches on the scalp.

3. BHRINGRAJ[16]

Figure 4.3

It is obtained from the aerial parts of Ecliptaprostrata/Ecliptaalba of the family Asteraceae. Bringhraj may prevent hair loss, dandruff and graying of hair. Helps in boosting blood circulation to hair follicles.

4. CAMPHOR [17]

Figure 4.4

It is obtained through distillation of the wood from the camphor laurel tree (Cinnamomumcamphora). Camphor has wide uses from treating cold, headache and cough when used as a muscle rub, for promoting hair regrowth when we use camphor essential oil mixed with coconut oil as a hair massage oil, and it also prevents fungal infection in scalp.

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5. FENUGREEK [18]

Figure 4.5

It is obtained from the dried seeds of Trigonellafoenum-graecum belonging to the family leguminosae. It helps to moisturize hair and replenishes hair growth. Fenugreek contains lecithin which acts as a natural emollient that conditions and moisturizes your scalp and hair deeply and controls scalp inflammation.

6. HIBISCUS [19]

Figure 4.6

It is obtained from the fresh petals of Hibiscus Rosa Sinensis belongs to the family malvaceae. It helps to strengthen your hair roots. Hibiscus flowers and leaves are rich in flavonoids and amino acids and also nourishes and thickens your hair.

7. NEEM [20]

Figure 4.7

It's obtained from the dried or fresh leaves of Azadirachtaindica of the family Meliaceae .It has a wide range of benefits on both skin and hair, mainly it has anti-inflammatory and anti-fungal properties.

8. INDIGO (NEELAYAMARI) [21]

Figure 4.8

Indigoferatinctoria, also called true indigo, is a species of plant from the bean family that was one of the original sources of indigo dye. Neelayamari promotes hair growth, for removing dandruff, preventspremature graying of hair & lice. It provides black color and beauty to the hair.Indigo powder (neelayamari powder) helps to grow thick andblack hair. Acts as an anti-dandruff agent. Used to make hair oil. Make the powder into paste form and apply on the scalp and hair.

9. ROSEMERYOIL [22]

Figure 4.9

Rosemary (Rosmarinusofficinalis) is a small evergreen plant that belongs to the mint family, which also includes the herbs lavender, basil, myrtle and sage. Its leaves are commonly used fresh or dried to flavor various dishes.

10. COCONUTOIL [23]

Oil derived from dried fruits of Cocusnucifera of the family Aceraceae.The lauric acid in coconut oil

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has nourishing properties that are especially prone to soak into the strands of your hair. Coconut oil absorbs into your hair quickly, providing moisture to tame frizz and healbreakage.

Use: moisturizer, vehicle, stimulates hair growth by unclogging pores.

Figure 4.10

FORMULATION OF POLYHERBAL HAIR OIL

SL NO	INGREDIENTS	FORMULA
1	AMLA	10 gm
2	Aloe vera	5 gm
3	Brigharaj	5 gm
4.	Camphor	1 gm
5.	Neelyamari(indigo)	10 gm
6.	Fenugreek	5 gm
7.	Hibiscus	5 gm
8.	Neem	5 gm
9	Rosemary oil	1 ml
10.	Coconut oil	Qs 100 ml

Table 4.1

III.METHOD OF PREPARATION OF POLYHERBAL HAIR OIL [24, 25]

The poly herbal hair oil was prepared by collecting various plant materials such as amla, aloe vera, bhringraj, camphor, Indian indigo, coconut oil, fenugreek, hibiscus, neem& rosemary oil. Accurately weigh all the dried and fresh herbs and are crushed into a fine form. Then directly boiled in base oil and continuously stir until the drug is completely extracted in the oil base. And was filtered through a filter medium (muslin cloth, filter paper).To the filtrate coconut oil was added to make up the volume to 100 ml. It was placed in an amber coloured bottle.

IV.EVALUATION OF POLYHERBAL HAIR OIL

General characterization: The general characters like color and odor were evaluated manually and the physical evaluation was carried out by testing the evaluation parameters such as specific gravity, Ph, viscosity, refractive index, acid value, saponification value. [26, 27]

- **SPECIFIC GRAVITY**

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 herbal hair oil and close it with a cap and again weigh it (b). Determine the weight of the sample per milliliter by subtracting the weight (b-a).

- **PH**

The pH of polyherbal hair oil was determined by using a pH meter.The most accurate common means of measuring pH is through a lab device called probe and meter,or simply, a pH metre.The probe consist of a glass electrode through which a small voltage is passed.Themeter,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 solution of known pH. Measurement is made by submerging the probe in the hair oil until a reading is registered in the pH meter.

- **ORGANOLEPTIC PROPERTY**

Color, odor, skin irritation was determined manually. Oil was applied on hand and exposed to sunlight for 5 minutes to check for any irritation over skin.

- **SENSITIVITY TEST**

The prepared herbal hair oil was applied on 1cm skin of the hand and exposed to sunlight for 4-5 minutes.

- **SAPONIFICATION VALUE**

2g of oil was accurately weighed and transferred into a 250ml iodine flask.25ml of 0.5 M alcoholic potassium hydroxide was added and boiled under reflux in a water bath for 30 minutes.

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Phenolphthalein was added as an indicator and titrated against 0.5M HCl (‘a' ml) similarly blank was performed ('b' ml) without the sample.
Saponification value: 28.05 (b-a)/w
Where,
W: weight in gram of the solution

- **ACID VALUE**

Preparation of 0.1M solution:

Weigh 0.56g KOH pellets and dissolve in 100ml of distilled water and stirred continuously. The prepared 0.1 molar KOH solution was filled in the burette.10 ml of oil was added with 25ml of ethanol and 25ml of ether. Phenolphthalein was added as an indicator and titrated with 0.1 molar potassium hydroxide solution.
Acid value: 5.61n/w
Where,
n: Number of ml of 0.1M KOH
W: Weight of oil

➢ **VISCOSITY**

It is an index of resistance of a liquid to flow, the higher the viscosity of a liquid, the greater is the resistance to flow. The viscosity was determined by using Ostwald’s viscometer.

➢ **PHYTOCHEMICAL SCREENING**

- Test for flavonoids Lead acetate Test: To 10ml of drug extract add a few drops of 10% lead acetate solution.
- Test for steroids and triterpenoidsSalkowski's Test: Few drops of conc.sulphuric acid were added to the test solution and allowed to Stand it for some time.
- Test for phenols Ferric chloride test: Add ferric chloride solution (5%)to the test extracts.

V.RESULTS AND DISCUSSION

The prepared formulation is green to greenish brown in color with pH in accordance withhuman skin neutral to slightly acidic. Proximate analysis and qualitative chemical test werperformed polyherbal hair oil preparation. The prepared polyherbal hair oil using the above-mentioned ingredients was evaluated for the following parameters and the results are tabulated below.

SL NO	PARAMETERS	OBSERVATION
1	COLOR	Greenish brown
2	ODOR	Characteristics
3	SPECIFIC GRAVITY	0.845
4	VISCOSITY	12.02
5	PH	6.75
6	SENSITIVITY TEST	No irritation
7	ACID VALUE	2.68
8	SAPONIFICATION VALUE	252.45

Table 5.1

Phytochemical screening:

Test	Observation	Result
Flavonoids	Yellow	Positive
Triterpinoids	Yellow color in lower layer	Positive
Triterpinoids	Blue-Black color	Positive

Table 5.2

Poly herbal hair oil
Figure 5.1

Specific gravity
Figure 5.2

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Phytochemical screening
Figure 5.3

pH
Figure 5.4

Viscosity
Figure 5.5

Acid value
Figure 5.6

Saponification value
Figure 5.7

VI.CONCLUSION

In general, the herbal formulation provides a good blend of vitamins, antioxidants, terpenoids, and essential oils. Values in the evaluation of the finished product showed that they are within the acceptable limits. Hence, it is concluded that the oil is beneficial in maintaining good growth of hairs, turning gray hairs to black, providing protection from dandruff, and results in lustrous hairs. Herbal hair oil is one of the most well recognized hair treatments. Herbal hair oil not only moisturizes the 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 various herbs and their importance in the formulation is presented in above. The various parameters like Sensitivity test, Viscosity, pH, Irritation test, phytochemical screening, Saponification value and Acid value of herbal hair oil were evaluated. Hence, from the present investigation it was found that the formulated herbal hair oil has optimum standards. Deep and profound investigations are needed of the time and future will see the favorable consequence of the genuine efforts of the enthusiastic researchers. Lastly we can predict with the above findings that the formulation is promising and even better results are expected with variation in the proportion of these drugs. .

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