

Formulation and evaluation of herbal hair oil

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Abstract

Herbal preparations gain high attention from big number of public from ancient time. It has always been popular to use herbal formulations. It has the ability to produce the best results without any negative effects. Herbal preparations are widely used for many purposes including correction, treatment, and beautification. Herbal formulations have always been popular due to their high activity and low side effects. Hair fall and hair damage are the most common and rapidly growing problems in young people.

The objective of this study was to formulate and examine the herbal oils intended for treating various hair issues. The preparation is made only from herbal products for better results. Herbal hair oil moisturizes scalp and hair while combating dry scalp and hair. The oil is advantageous in preserving hair condition.

Keywords: natural herbs, herbal hair preparation, hair cosmetic, hair growth regulators

Introduction

The concept of beautification for body and hairs is coming from ancient time. They use the products prepared from herbs, plants, flowers and plant parts because they are safe for use and they don't have any side effect. They improve their aesthetic value by means of using herbal preparations. ^[1]

Hair loss affects both men and women. So it's vital to develop new hair loss treatment theories. Hair is an important part of our body that affects our overall appearance and also it gives a confidence to the individual. ^[2]

Hair care products widely used as cleansing agent, coloring agent, nourishing agent etc. ^[3] Many herbal oils have been developed, but only a few have been shown to be highly active. Great hair oil completes hair care with shampoo and conditioner. ^[4] Herbal hair oils are a well-known hair treatment product. It not only moisturizes the scalp, it heals damage hair too. It stimulates natural hair growth by providing vital nutrients required by the sebaceous gland. ^[5]

Hair oils are hair care preparations used to prevent and treat baldness and other hair problems. Hair tonics are herbal extracts in an oil base that are formulated as hair oils. ^[6] The formulation provided the appearance of the hair oil, i.e. colour, fragrance, etc. Biochemical treatments not always work as desire and may have side effects, as evidenced by retrospective data. Herbalism and natural products are trendy. Indian herbs are a rich source for cosmetic industries. ^[7, 8] Most countries now have laws preventing the use of harmful cosmetics. ^[9] Cosmetics are substances used to improve the body's appearance or odour. Hair is a distinguishing feature of mammals. Hair is commonly associated with growth, types, and care, but it is also a protein-rich biomaterial. ^[10] To prepare and evaluate herbal hair oil with herbs like curry leaves, fenugreek and amla in coconut oil. These herbs have all been used traditionally to treat hair problems. ^[11]

Materials and Methods ^[12, 13, 14]

Table 1

Sr. No.	Ingredients Name	Botanical Name	Chemical Constituents	Part Used in the Form	Benefits
1	Coconut oil	<i>Cocos nucifera</i>	Fatty acid	Oil	Hair grow faster
2	Castor oil	<i>Ricinus communis</i>	Fatty acid	Oil	Balance pH level Anti-dandruff properties. Prevents fizzy hairs Moisture Cooling effect
3	Bhringraj	<i>Eclipta prostrata</i>	Alkaloids ecliptine	Powder	Promotes hair growth and cures baldness
4	Curry leaves	<i>Murraya koenigi</i>	Oxygenated imono-terpens	Powder	Reduce hair fall Treat damage hair Remove clogged hair follicles Scalp restoration
5	Neem	<i>Azadirachta indica</i>	Azdirachtin salannin	Oil	Antimicrobial
6	Amla	<i>Phyllanthus</i>	Ascorbic acid	Powder	Stimulate hair growth. Reduce

		<i>emblica</i>			hair loss
7	Fanugreek	<i>Trigonella foenum-graecum</i>	Alkaloids and amino acid	Powder	Adds shine and soft texture. Prevents premature grey hair
8	Aloe vera	<i>Aloe barbadensis miller</i>	Vitamins enzymes	Gel	Stimulate hair growth Add shine and strength Hydrate hair Anti-fungal and anti-dandruff properties
9	Menthol	<i>Mentha piperita</i>	Menthyl acetate β -caryophyllene	Oil	Improve hair growth and prevent some hair loss.
10	Tulsi	<i>Ocimum tenuiflorum</i>	Oleanolic acid, Ursolic acid	Tulsi extract	Helps to stimulate blood circulation
11	Hibiscus	<i>Hibiscus rosa-sinensis</i>	Polysaccharides arabins	Powder	Make hair look healthy and lustrous.
12	Shikakai	<i>Acacia concinna</i>	Lupeol, spinasterol, acacic acid, lactone	Powder	Soothes Scalp. Restrains Hair Loss
13	Kalaunji	<i>Nigella sativa</i>	Crude fibers, amino acids, iron, sodium, calcium	Seed	Used to fight hair fall and even to induce hair re-growth
14	Almond oil	<i>Prunus amygdalus</i>	Palmitoleic, margaric, stearic, linolenic,	Oil	It improve hair soften and strengthen health
15	Lavender essential oil	-	-	Oil	For fragrance

Collection of Plant Part

All the materials were collected from local market of Indore. All powder material passed through sieved by sieve no. 120 to get uniform size particles before weighing the accurate quantity.

Formulation of Herbal Hair Oil¹

The constituent used in the formulation of herbal oil are presented in Table 1.

All powders were blended together to get a homogeneous mixture. Coconut oil was added to the powder preparation and mixed adequately. The mixtures were boiled for 15-20 min and preparation filtered through muslin cloth. To this filtrate, remaining quantity of coconut oil, castor oil and were added for make up the volume. Finally, small amount of perfuming agent was added to the preparation and transfer in amber-colored bottle^[15].

Table 2: Composition of Herbal hair oil [12, 13, 14]

S. No.	Ingredients	Quantity (100ml)
1	Coconut oil	25 ml
2	Castor oil	35 ml
3	Bhringraj	5 g
4	Curry leaves	5 g
5	Neem oil	2 ml
6	Amla	5 g
7	Fanugreek	2 g
8	Aloe vera	3 ml
9	Menthol	2 ml
10	Tulsi	3 ml
11	Hibiscus	1 g
12	Shikakai	3 g
13	Kalonji	3 g
14	Almond oil	5 ml
15	Lavender essential oil	Q.S.

Evaluation of Herbal Hair Oil

▪ Organoleptic properties^[16]

Organoleptic properties such as color, physical state, odor and solubility were determined manually.

- **Sensitivity test** ^[17]

Testing the sensitivity performed of the prepared formulations, the study performed on healthy human volunteers at the area of 1 cm² of hair oil on hand. The formulations were applied to the test sites exposed to sunlight for 5-10 minutes and monitored for erythema and edoema for 48 hours.

- **Acid value** ^[18]

Preparation of 0.1 molar solution

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 shake vigorously. 1 mL of phenolphthalein solution was then added and titrated with 0.1 molar KOH solutions.

- **Saponification value** ^[19]

1 mL oil was accurately measured into a 250 mL conical flask, followed by 10 mL ethanol:ether (2:1) mixture. It was then mixed with 25 mL of 0.5 N KOH. After 30 minutes, the flask cooled. The cooled solution was titrated with 0.5 N HCl. The blank titration was also done without oil (sample). The amount of KOH consumed in mg is shown below

- **Saponification value = $31.05 * (X - Z) / W$**

Where,

X = ml of KOH required to neutralize the substance,

Z = ml of KOH required for blank, and

W = Weight of the sample taken for the test (g).

- **pH** ^[19]

The pH of herbal hair oil was checked using pH meter

- **Viscosity** ^[19]

The flow rate of preparation, the viscosity was determined using Brookfield's viscometer.

- **Specific gravity** ^[20]

The same specific gravity bottle was rinsed with distilled water, dried in a hot air oven for 15 minutes, cooled, capped, weighed, and noted as A. The sample weight per milliliter was calculated by subtracting the (B-A)

Result and Discussion

This study presents the use of herbal plant products with proven efficacy as in the hair care preparation. This investigation was carried out on the basis of traditional and present days knowledge that used to formulate the herbal hair oil to develop few parameters for quality and purity of the herbal hair mask. Moisturizes scalp and reverses dry scalp and hair. It contains many nutrients necessary for normal sebaceous gland function and promotes natural hair growth. The herbal hair oil was made from various herbs and tested for sensitivity, viscosity, pH, and saponification value. Further standardization and biological screening establishes the efficacy of the formulated herbal hair oil. Herbal hair oil using natural ingredients were prepared and evaluate for the different parameters and result observed as:

Organoleptic Property

The developed formulation was checked for their organoleptic properties and their results are as follows

- Color: Dark brown color
- Physical state: Liquid with greasy in nature
- Odor: Aromatic
- Polarity: Non-polar
- Solubility: Soluble in non-polar solvents

Sensitivity test

This test was performed to check the skin sensitivity of the formulated oil. The prepared formulation did not show any erythema/ edema on the intact skin of humans when applied on skin. The result shows that the formulated oil was safe for use on human beings.

Acid value

The result of acid value was observed as **3.7**

Saponification value

The result of saponification value was observed as **197.04**

pH

The result of pH observed as: **6.4**

Viscosity

The result of viscosity was observed as 0.93 CPM

Specific gravity

The result of specific gravity was observed as 0.088

Conclusion

The formulated preparation checked evaluated at different parameter and all results found satisfactory. As all the ingredients used are herbal products. Hence from the results it was concluded that the prepared formulation has optimum standards and further standardization establishes the efficacy of formulated herbal hair oil. It is consider that preparations are safe for external use, herbal hair oil preparation is safe and beneficial to use and it has no any side effect, it is suitable for all types of hairs.

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