

FORMULATION AND EVALUATION OF POLYHERBAL HAIR OIL

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ABSTRACT

The current research aimed to formulate polyherbal hair oil utilizing fresh and dried herbs like amla, aloe vera, Tulasi, hibiscus, shikakai, curry leaves, jasmine, neem, fenugreek and other ingredients such as almond oil, coconut oil. The polyherbal hair oil formulated can satisfy all the required conditions to keep the hair moisturized, strengthen the hair and prevent dandruff caused by bacteria. The prepared polyherbal hair oil was evaluated for pH, specific gravity, viscosity, irritation, grittiness, acid value, and saponification value. All the parameters were found to be good and within the limits.

Keywords: Polyherbal, Coconut oil and Almond oil.

INTRODUCTION

The hair on our bodies has a particular structure and is divided into thin and thick hair. Thin hair, also called lanugo or vellus, is located on all skin surfaces except for the palms of the hands and the soles of the feet. Thick hair, also called terminal hair, is dark and located only in some areas such as the scalp, the armpits, the pubic area, and the beard area in the case of men.

Hair is located in the hair follicle, a particular skin structure with a sac-like form, tilted by approximately 75° concerning the skin's surface. The lower part of the hair follicle is located in the deeper part of the dermis but its depth level varies from hair to hair (in the case of hair on the head, the average depth is around 0.6 -1 cm). Hair oil is oil applied to the hair as a cosmetic, conditioner, styling aid, restorative, or tonic. Hair oils have been used for many different purposes such as hair growth, health, dryness, scalp, or fixing damaged hair. Various forms of hair oils can be applied such as natural hair oils which include traditional hair oils like coconut, castor, or almond oil. Humans produce natural hair oil called sebum from glands around each follicle. Other mammals produce similar oils such as lanolin. When hair oils are first applied onto the scalp, the effect of the oil on the lipid

barriers varies depending on the type of oil. Hair oils have huge benefits due to the effect that it has on the scalp. When oil is first applied, the oil forms a protective hydrophobic film that decreases trans-epidermal water loss as it reduces evaporation from water from the skin. The reduction of water loss is important to the scalp because it helps reduce fatigue such as swelling and dryness. Further so, hair oils fill up any gaps between the cuticle cells which prevents the penetration of any damaging substances in the hair follicle. Mineral and vegetable oils are used to make a variety of commercial and traditional hair oils. Coconut oil is a common ingredient and brands which use this include Parachute. Natural hair oils of Almond, Sesame, Olive, Grape seed, Jojoba, Coconut, and Argan are considered supreme oils, best suitable for healthy hair growth. They can be applied directly on the hair as well as the skin. Even essential oils consisting of Lavender and Lemongrass have numerous qualities that help nourish and strengthen the hair. These are the best hair oils that not only bestow an amazing fragrance but also contain enriching properties that benefit your hair to a great extent. Coconut oil is a commonly used oil in hair products and just by itself. Coconut oil was found to have properties that

reduce protein loss in hair when used before and after washing. Coconut oil is known to have lauric acid, which is a type of fatty acid that allows it to penetrate within the hair follicles and therefore heal and repair hair that is damaged. Aside from this, coconut oil is also widely known for moisturizing hair to avoid breakage. There are many varieties of coconut oil that include refined, unrefined, and extra-virgin. It works by repairing brittle hair, and prevents split ends those with slower hair growth can use it to enhance the rate of hair growth.

MATERIALS AND METHODS

Collection of Plant Material

All the fresh and dried herbs such as amla, aloe vera, hibiscus, Tulasi, shikakai, curry leaves, jasmine, neem, fenugreek, coconut oil, and almond oil were collected and weighed.

Preparation

The preparation of polyherbal hair oil is as follows: Initially, all the dried and fresh herbs such as amla, aloe vera, Tulasi, hibiscus, shikakai, curry leaves, jasmine, neem, and fenugreek are weighed. In the mortar, all the weighed materials were taken and triturate with the pestle and the mixture was mixed in 60 gm of oil. The above content was boiled for 15 minutes and filtered through a muslin cloth. To the filtrate 25 gm of oil was added to make up the volume (100ml). Finally, a small amount of flavoring agent was added to the oil and it was placed in the container. In the mortar, all the weighed materials were taken and triturate with the pestle and the mixture was mixed in 60 gm of oil. The above content was boiled for 15 min and the mixture was filtered through a muslin cloth. To the filtrate 25 gm of oil was added to make up the volume (100ml). Finally, a small amount of flavoring agent was added to the oil and it was placed in the container.

Table 1: Materials

S.No	INGREDIENTS	PURPOSE
1	Amla	Strengthens the hair
2	Aloe vera	Boosting scalp health
3	Tulasi	Improves blood circulation and treats hair fall
4	Hibiscus	Controls premature graying
5	Shikakai	Antidandruff
6	Curry leaves	Preventing hair loss
7	Jasmine	Conditioning agent provides good odor
8	Neem	Treat dandruff and hair growth
9	Fenugreek	Promotes hair growth
10	Coconut oil	Moisturizes dry hair
11	Almond oil	Treat hair loss and strengthens the hairs

Table 2: Formulation Table

S.no	INGREDIENTS	FORMULA (F ₁)	FORMULA (F ₂)	FORMULA (F ₃)	FORMULA (F ₄)
1	Amla	1.5 gm	-	2 gm	-
2	Alovera	-	-	4 gm	4gm
3	Tulasi	2 gm	2 gm	2 gm	2gm
4	Hibiscus	1 gm	2 gm	1 gm	1gm
5	Shikakai	2.5 gm	3 gm	2 gm	2gm
6	Curry leaves	1 gm	1 gm	-	-
7	Jasmine	1 gm	1 gm	1 gm	1gm
8	Neem	2 gm	3 gm	-	-
9	Fenugreek	4 gm	3 gm	5 gm	5gm
10	Coconut oil	60 gm	60 gm	85 gm	60gm
11	Almond oil	25 gm	25 gm	-	25gm

EVALUATION TESTS

Physio-chemical evaluation

To assess the hair oil formulations, the physicochemical properties of the oil were estimated.

Physical examination

Colour

Odour

Irritation test

Grittiness test

Skin Irritation test

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

pH

The pH of herbal hair oil was determined using a pH meter.

Viscosity

The viscosity was determined using Ostwald's viscometer. The viscometer was mounted in a vertical position on a suitable stand. Oil was filled into the viscometer up to mark A. The was counted for water to flow from mark A to mark B. the same procedure was repeated for the test liquid by using the above formula and the viscosity of the test liquid can be determined.

Specific gravity

The specific gravity bottle was rinsed with distilled water, dried in a hot air oven for 15 minutes, cooled, capped, weighed, and noted as (a). Now the same specific gravity bottle was filled with the sample, capped and again

weighed (b). The weight of the sample per milliliter was determined by subtracting the weights (b-a).

$$\text{Specific gravity} = \frac{\text{Density of oil}}{\text{Acid value}}$$

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

Saponification value

To accurately weighed 1 mL of oil in 250 mL of the conical flask, 10 mL of ethanol: ether mixture (2: 1) was added. To this, 25 mL of 0.5 N alcoholic KOH was added and was kept undisturbed for 30 min. and the flask was cooled. This solution was titrated against 0.5 N HCl using phenolphthalein indicator. Similarly, the blank titration was performed without taking oil (sample). The amount of KOH in mg used was calculated using the formula.

$$\text{Saponification Value} = 56.1(B-S) N/W$$

Where B= Volume in mL of standard Hydrochloric acid required for the blank.

S= Volume in mL of standard Hydrochloric acid

RESULTS AND DISCUSSION

Table 3: Results

S.no	Parameters	F1	F2	F3	F4
1	Colour	Greenish yellow	Greenish yellow	Greenish	Greenish
2	Odour	Characteristic	Characteristic	Characteristic	Characteristic
3	Irritation test	No	No	No	No
4	Grittiness test	Smooth	Smooth	Smooth	Smooth
5	p ^H	6.5	6.8	6.7	6.4
6	Viscosity	0.921	0.902	0.949	0.918
7	Specific gravity	0.95	0.96	0.98	0.94
8	Acid value	4.3	4.5	3.5	4.6
9	Saponification value	197.01	198.01	202.1	195.02

CONCLUSION

All the parameters showed that they are within the limits and since all the ingredients added have many advantages, this oil will help in maintaining good growth of hair, turning grey hair to black, strong and healthy hair, and fixed damaged hair, protecting from dandruff and results in lustrous looking hair. Hence from the present investigation, it was found that the formulated herbal hair oil has optimum standards and further standardization and biological screening establishes the efficacy of formulated herbal hair oil.

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