ORIGINAL ARTICLE

Formulation and evaluation of polyherbal hair oil

Amol A. Joshi, Pravin M. Dyawarkonda

Department of Pharmacognosy, Arvind Gavali College of Pharmacy, Satara, Maharashtra, India

Abstract

Aim: This study aimed at reviewing the importance of polyherbal hair oil for the treatment of common hair problems such as baldness, alopecia, hair fall, gray hair, dryness, and most common dandruff. **Materials and Methods:** The various herbal ingredients are used in the formulation are: Amla, Bhringraj, Yashtimadhu, Triphala, Henna, Neem, *Aloe vera*, hibiscus flowers, coconut oil, cow milk, grated coconut, and water. All ingredients provide essential nutrients such as vitamin, antioxidant, protein, terpenoids, and many essential oils to maintain normal function of sebaceous glands. Procedure for oil preparation is divided into two parts: (1) preparation of decoction of all the herbs and (2) oil preparation. **Results and Discussion:** Excellent results of hair growth were seen in formulation prepared by the abovementioned procedure. Formulated herbal oil was evaluated for various parameters such as specific gravity, viscosity, acid value, saponification value, pH, and irritation tests. **Conclusion:** In general, herbal formulation provides good blend of vitamins, antioxidants, terpenoids, and essential oils. All the values in the evaluation of 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.

Key words: Tail, alopecia, baldness, phytonutrients

INTRODUCTION

Herbal cosmetics are prepared by the association of bioactive ingredients and pharmaceutical products. The presence of number of phytochemicals and botanicals in the herbal products have dual significance, one that they are used as cosmetics for body care and another that phytochemicals improve the biological functions of human body naturally results in healthy skin and hairs.[1] As the name suggests, the herbal extracts means the extracts of herbs. It is an ancient methodology because its origin was discovered from the holy Vedas and in Unani scriptures. As the realization said that the chemical medicines are not always work as magic bullets and they may have side effects. The current trend moves toward the herbalism and use of natural products. Indian herbs are the richest source to be used in cosmetic industries.[2]

Herbal cosmetics were gaining tremendous demand in the world market. There is a wide range of herbal cosmetic products used as beauty regime to satisfy the purpose of beautification. Adding herbs in cosmetics is safer for our skin.[3] Herbal hair oils were serving the purpose of hair treatment. Herbal hair oil not only moisturizes scalp but also reverses dry scalp and dry hair conditions. It provides numerous essential nutrients required to maintain normal functions of the sebaceous gland and promote natural hair growth.

There are two categories of hair care products. They are hair tonics and hair grooming aids. Hair oil those contains herbal drugs are called as hair tonics. These are formulated by herbal extracts in an oil base. Hair oils are the hair care formulations applied for treatment of hair disorders such as baldness, greying of hairs, hair falling, and dryness of hairs.

MATERIALS AND METHODS[4,5]

All the required raw materials were procured from local market shop Wagdole Ayurvedics, Satara.

Address for correspondence:
Dr. Amol A Joshi, Arvind Gavali College of Pharmacy, Satara, Maharashtra, India.
E-mail: amol565@gmail.com

Received: 26-01-2017
Revised: 08-02-2017
Accepted: 18-02-2017

Procedure for Preparation of Hair Oil[6,7]

The procedure involves 2 parts.

Part 1-making decoction

Kashayam (decoction) is the water extract of the herbs. Take all the herb powders - Amla, Bhringaraja, Liquoorice, Triphala, *A. vera*, Henna, Neem - into a wide-mouth vessel. While adding herbs, keep around 2 g of each of these herbs separately. Add the remaining part of the herbs to the vessel. Add water to it. Boil this mixture till you get around half quantity. While boiling, stir continuously. Boil on mild fire. Taking a wide-mouth big vessel helps avoid spilling of boiling Kashayam. After getting half quantity, filter the Kashayam.

Part 2-oil preparation

Take 200 ml coconut oil in a big wide-mouth vessel. Add prepared Kashayam to it. Add 80 ml milk to it. Put grated coconut into a mixer/grinder, add a little water, and grind it. Add the ground coconut along with liquid to the vessel. Add chopped hibiscus flower pieces into the vessel. Start heating the whole mixture on mild fire. Stir continuously.[9]

Observations

There is a need of complete removal of moisture from the oil. Hence, we got around 200 ml of the oil. In the initial phase of boiling the oil, larger bubbles were observed. These bubbles indicate water being evaporated. In the initial phase, the whole mass looks very unclear. However, as the process moves on, the liquid becomes clearer. At the final stage, the vessel started exhibiting aroma, the powders turn into a paste, which you can roll into the form of a wick, and there will be formation of foam. After that, the big bubbles were disappeared. Then, we put the paste on spoon and heat it on mild fire; it does not produce any cracking sound. This indicates the complete removal of moisture from the oil. Stop heating at this precise point and filter it when it is hot.

Evaluation Parameters[6,7]

The formulated herbal hair oil was subjected to physical evaluation.[2]

Specific Gravity

Take the specific gravity bottle, rinse it with distilled water. Dry it in oven for 15 min, cool, close it with cap and weigh it (a). Now, fill the same specific gravity bottle with the sample and close it with cap and again weigh it (b).

Determine the weight of sample per milliliter by subtracting the weight (b-a).

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.

pH

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

Acid Value

Preparation of 0.1 molar solution

Weigh 0.56 g KOH pellets and dissolve in 100 ml of distilled water and stir continuously. The prepared 0.1 molar KOH solution was filled in the burette.

Preparation of sample

Measure 10 ml oil and dissolve in 25 ml of ethanol and 25 ml of ether mixture and shake. Add 1 ml of phenolphthalein solution and titrate with 0.1 molar KOH solution.

Acid value = 5.61V*N/W

Where, V = Volume of standard sodium hydroxide used (ml), N = Normality of the sodium hydroxide solution, W = Weight of the sample (g).

Saponification Value

Accurately weigh 1 ml of oil into a 250 ml of conical flask and 10 ml of ethanol:ether mixture (2:1) was added. To this flask, 25 ml of 0.5 N alcoholic KOH was added. Keep the flask for 30 min, and the flask was cooled. The cooled solution was titrated against 0.5 N HCl using phenolphthalein as indicator. Similarly, the blank titration was performed without taking oil (sample). The amount of KOH in mg used was calculated.

Saponification value = 28.05*(B-S)/W

Where, S = ml of KOH required to neutralize the substance, B = ml of KOH required for blank, and W = Weight of the sample taken for the test (g).

RESULTS AND DISCUSSION

Color and odor of the oil sample were typical of their constituents.

The pH of oil was found to be 6.8 which was relevant with human skin.

Table 1: Plants used for preparation of herbal hair oil

Common name, biological source, and family	Part used	Uses	Figure
Coconut oil *C. nucifera*, Arecaceae	Kernel	Raw material for hair oil and hair tonic, moisturizer	
Cow milk	Milk	Hair nourishment, improves consistency.	
Amla *E. officinalis*, Euphorbiaceae	Fruit	Antioxidant, treat the scalp ailments, hair growth	
Bhringraj *E. alba*, Asteraceae	Whole plant	Promoting hair growth, hair nourishment, antidandruff	
Yashtimadhu *G. glabra*, Leguminosae	Roots	Nourishes the scalp, heal damage, helps in hair growth	
Triphala (Amla, Herda, Behda)	Fruits	Promoting hair growth	

(Contd...)

Table 1: *(Continued)*

Common name, biological source, and family	Part used	Uses	Figure
Henna *L. inermis,* Lythraceae	Leaves	As hair dye	
Neem *A. indica*, Meliaceae	Leaves	Antimicrobial, antiseptic, antidandruff	
A. vera *A. barbadensis,* Liliaceae	Leaf pulp	Moisturizer, softening of hairs	
Hibiscus *H. rosa-sinensis*, *Malvaceae*	Flower paste	Provides nutrition and hair shine	

C. nucifera: Coccus nucifera, E. officinalis: Emblica officinalis, E. alba: Eclipta alba, G. glabra: Glycyrrhiza glabra, L. inermis: Lawsonia inermis, A. indica: Azadirachta indica, A. barbadensis: Aloe barbadensis, H. rosa-sinensis: Hibiscus rosa-sinensis, A. vera: Aloe vera

The acid value is an indication of rancid state. More acid value indicates the higher percentage of free fatty acid. Lower the acid value, higher the yield/quantity of oil. The acid value of formulated hair oil was found to be 2.97.

CONCLUSION

In general, the herbal formulation provides good blend of vitamins, antioxidants, terpenoids, and essential oils. All the

Table 2: Formula of herbal hair oil

Ingredients	Quantity
Coconut oil	200 ml
Cow milk	100 ml
Grated coconut water	80 ml
Water	400 ml
Amla (*E. officinalis*)	20 g
Bhringraj (*E. alba*)	20 g
Yashtimadhu (*G. glabra*)	20 g
Triphala	20 g
Henna (*L. inermis*)	20 g
Neem (*A. indica*)	20 g
Aloe vera (*A. barbadensis*)	10 g
Hibiscus flower (*H. rosa-sinensis*)	10 g

E. officinalis: Emblica officinalis, E. alba: Eclipta alba, G. glabra: Glycyrrhiza glabra, L. inermis Lawsonia inermis, A. indica: Azadirachta indica, A. barbadensis: Aloe barbadensis, H. rosa-sinensis: Hibiscus rosa-sinensis

Table 3: Evaluation of herbal hair oil

Evaluation parameters	Results
Specific gravity	1.13
Viscosity	0.026 centipoise
Acid value	2.97
Saponification value	223.40
pH	6.8

values in the evaluation of 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 grey hairs to black, providing protection from dandruff, and results in lustrous hairs.

REFERENCES

1. Saraf S. Herbal hair oil cosmetics: Advancements and recent findings. World J Pharm Res 2014;3:3278-94.
2. Dwivedi S. Formulation and evaluation of herbal hair oil. Int J Chem Sci 2012;10:349-53.
3. Mithal B, Shah R. A Hand Book of Cosmetics. 1st ed. New Delhi: Vallabh Prakashan; 2000. p. 141-2.
4. Evans W. Pharmacognosy. 15th ed. Edinburgh: Saunders Publishers Ltd.; 2002. p. 292.
5. Kapoor V. Herbal cosmetics for skin and hair care. Indian J Nat Prod Resour 2005;4:306-14.
6. Nema R. Preparation, evaluation and hair growth stimulating activity of herbal hair oil. J Chem Pharm Res 2009;1:261-7.
7. Gautam S. Fomulation and evaluation of herbal hair oil. Int J Chem Sci 2012;10:349-53.
8. Kamal A. Physicochemical investigation of some herbal hair oil. Int J Pharm Sci Rev Res 2015;15:93-5.

Source of Support: Nil. **Conflict of Interest:** None declared.