Formulation and Evaluation of Poly Herbal Hair Oil

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ABSTRACT

Herbal cosmetics widely use herbs and floras to make cosmetics for beautification because of their less side effects. The active principles of the herbs do not have any reactions on the human body, further they enhance the body with nutrients and other helpful minerals. Alopecia, grey hair and split hair ends are the common problems faced by all age groups irrespective of sex in all over the world. The present work aimed to formulate and evaluate the poly herbal hair oil, which is prepared by using various herbs. These herbs are traditionally used for hair growth. Prepared herbal hair is evaluated by various parameters such as pH, specific gravity, viscosity, acid value, saponification value. Antioxidant activity of hair oil is evaluated by DPPH radical scavenging activity. All the values which are obtained during the process of evaluation are within the acceptable values.

Keywords: Herbal cosmetics, herbs, hair fall
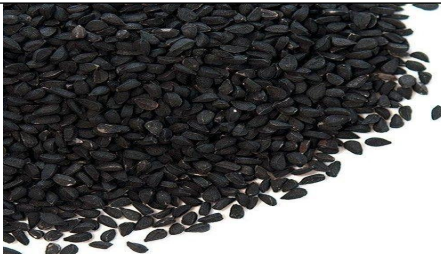
INTRODUCTION

Ayurveda means science of life. It   is considered as traditional system of medicine in India. In Ayurveda herbs are considered as an integral part of health care system. It comprises of many medical concepts and hypothesis. Due to increased side effects produced by synthetic drugs, Public has shown more interest on treatment with complementary and alternative medicines. In India more than 70% of population rely on use herbal cosmetics.[1]

Ayurveda utilizes many herbs and floras to make cosmetic preparations for beautification and protection from external affects. The active principles in these herbs do not cause any side effects on the human body, instead they enrich the body with nutrients and minerals.[2] According to the Drugs and Cosmetics Act cosmetics are defined as an articles intended to be rubbed, poured, sprinkled or sprayed on, introduced into or otherwise applied to the human body or any part for cleansing, beautifying, promoting attractiveness or altering the appearance. [3] There is a general belief that synthetic based cosmetics are harmful to the skin, this leads to an increased awareness among consumers for the use of herbal products [4]

Herbal cosmetics are defined as products which are formulated using various permissible cosmetic ingredients to form the base in which one or more herbal ingredients are used to provide defined cosmetic benefits only are called as "Herbal Cosmetics". Herbal cosmetics are purely made up of crude part of herbs and shrubs. Herbal cosmetics has less side effects when compared with synthetic products. These cosmetic preparations are not toxic and they can be applied on any type of the skin.[5]

Hair fall, split ends and grey hair are the common problems faced by the people all over the world. Among all these hair fall is the common problem faced by all ages of men and women. The hair loss may be due to imbalance diet, stress, autoimmune diseases or any illness due to any reason. The best way to promote hairfall and hair growth was promote by use of herbal oils. [6] Herbal hair oils are the hair care products which are formulated with herbal extracts in oily base. Herbal hair oil moisturizes the scalp and it provides essential nutrients required for maintaining the normal functions of sebaceous gland and promotes the natural hair growth. [7] The present work was planned accordingly to formulate and evaluate a new herbal hair oil which prevents hair fall and reduces greying of hair.

Table 1: Represents the different herbs used in the formulation of herbal hair oil [8]

S.No	Herbs	Figures
1.	Amla (Emblica officinalis) Amla strengthens the hair follicles and reduces hair thining. Amla rich in vitamin c increases the antioxidants and purifies the blood and enhances the natural colour to the hair by preventing premature greying of hair.	
2	Aloe vera (Aloe barbadensis) It cleanses the hair shaft and provides proteolytic enzymes, repairs the dead cells on the scalp. It serves as a conditioner and promotes your hair shinier and softner. It promotes the hair growth, prevents itching on the scalp and treats dandruff.	
3	Fenugreek seeds (Trigonellafoenum-graecum) Fenugreek seeds are rich in protein which is beneficial against hair fall and dandruff. These seeds help in moisturizing the hair and prevent dryness of hair and baldness.	
4	Kalongi seeds Kalongi seed has antiinflamatory compounds which reduces irritation on the scalp, it is used in the treatment of dandruff. It provides nutrients to hair follicles and promotes hair growth.	
5	Hibiscus (Hibiscus rosa-sinensis) Hibiscus flowers and leaves are rich in flavanoids, vitamin c, mucilage, antioxidants. Flavanoids enhances the blood circulation and promotes hair growth by nourishing the hair locks and promotes normal soft texture to the hair. It delays premature greying of hair.	
6	Neem leaves(Azadirachta indica) Antibacterial, antifungal and anti-inflammatory properties in neem leaves are used to treat dandruff. It also helps the hair follicles to become stronger and encourages the hair growth.	
7	Sesame oil (Sesamum indicum) Sesame oil is a rich source of vitamin E which is a natural antioxidant. It is also rich in other source of minerals like zinc, copper, magnesium, calcium ,iron and vitamin B6. This constituents nourishes and detoxifies the damaged hair. It promotes hair growth and prevents premature greying of hair.	
8	Coconut oil Vitamins and free fatty acids helps to nourish the scalp and penetrates into the cuticle of hair and promotes hair growth.	

MATERIALS AND METHODS

Ingredients used in the poly herbal hair oil are depicted in table 2. Some of the Herbs are collected from the medicinal garden of Mallareddy College of Pharmacy. Fenugreek , Kalongi seeds, sesame oil and cocnut oil are procured from the local market . Aloe vera, amla, hibiscus leaves , flowers and neem leaves are weighed accurately and subjected to shade dry, pulverized by mechanical grinder into coarse powder. Fenugreek, kalongi seeds are pulversied into a coarse powder. The powdered mixture of all the ingredients was mixed with 63% of sesame oil and boiled for 20 minutes. The oil was filtered through muslin cloth. To the filtrate coconut oil was added to make up the volume up to 100ml.

Table 2: Ingredients used in the formulation of herbal hair oil

S.No	Ingredients	Quantity(gm)
1	Amla	10gm
2	Aloevera	5gm
3	Fenugreek seeds	4gm
4	Kalongi seeds	5gm
5	Hibiscus leaves	5gm
6	Hibiscus petals	5gm
7	Neem leaves	8gm
8	Onion	4gm
9	Sesame oil	65ml
10	Coconut oil	25ml

Evaluation of herbal hair oil
The formulated herbal hair oil was subjected to physical and biological evaluation.

Physical Evaluation
The general characters like colour, odour are evaluated manually. Physical evaluation parameters are sensitivity test, specific gravity, refractive index, acid value and saponification value were determined.

Sensitivity test
The formulated herbal oil was applied on 1cm skin on hand and exposed to sunlight for 4- 5 minutes. [9]

Determination of Acid value [9]
Preparation of 0.1M KOH solution:
Weigh accurately 0.56gm of KOH pellets , dissolve in 100ml of distilled water and stir continuously until it dissolves. The burette is filled with 0.1 M KOH solution.
Preparation of sample solution:
Pipette out 10ml of prepared oil into a conical flask and dissolve in 10ml of 1:1 ethanol : ether mixture(2:1). Add 1ml of phenolphthalein solution and titrate against 0.1 M KOH solution.

$$\text{Acid Value of oil} = MW_{KOH} \times N \times V / W_s$$

MW_{KOH} - Molecular weight of KOH
N   - Normality of KOH
V   - Burette reading
W_s - Weight of the sample
Acid value: 5.6 n/W   n=no. of ml of 0.1M KOH

Procedure
Weigh accurately 2gm of oil and transfer into the conical flask and dissolve in 10ml of 2:1 ethanol : ether mixture. To this flask add 25ml of 0.5M alcoholic KOH and boiled under reflux on a water bath for 30 minutes. Add 1ml of phenolphthalein solution and titrate against 0.5N HCl. Perform the blank titration in similar manner by omitting the sample.

$$\text{Saponification value} = 28.05 \ (B\text{-}S) / W$$

B- Burette reading of blank determination
S-Burette reading of sample determination
W- Weight of the sample.

Determination of pH
PH of the oil is determined by using pH meter.

Determination of specific gravity
Specific gravity bottle was cleaned with distilled water, dried in hot air oven for 15 minutes, cooled, capped, weighed and was noted as (a). Now the bottle was filled with the sample, capped and weighed again and noted as (b). Weight of the sample per milliliter was determined by subtracting the weights (b-a) (Singh, 1996). [8]

Determination of Viscocity
The viscosity was determined by ostwalds viscometer.

Determination of Antioxidant activity

DPPH Radical Scavenging Activity

Free radical scavenging activity of DPPH was evaluated by shimada et al. method .[10] Stock solution of DPPH was prepared by dissolving 33mg of in 1L of methanol, the initial absorbance of stock solution was 0.493. one ml of oily solutions of different concentration (20, 40, 60,80 and 100µg/ml in ethanol:ether mixture were prepared). The reaction mixture was initiated by adding 5ml of DPPH solution to the 1ml of reaction mixture. The reaction mixture was incubated for 30 minutes at room temperature and the absorbance was measured at 517nm in UV spectrophotometer.

RESULTS AND DISCUSSION

Herbal hair oil is one of the best remedy for hair fall and other hair related problems. Hair fall is one of the dreaded phenomenons experienced by the men and women of all age groups. Hair oil promotes hair growth and reverses the dry scalp and dry hair conditions. It provides essential nutrients required to maintain the normal functioning of sebaceous glands. The poly herbal hair was prepared and evaluated for the following parameters and the results are shown in the table 3.

Table 3: Evaluation parameters of hair oil

S.No	Parameter	Observation
1	Colour	Greenish black
2.	Odour	Characteristic odour
3.	Specific gravity	0.9243
4.	Refractive Index	1.332
5	pH	7.2
6	Viscocity	0.9422 poise
7	Acid value	1.247
8	Saponification value	251
9	Irritation test	No irritation
10	Sensitivity test	No irritation

Table 4: Absorbance and % radical scavenging activity values of different concentrations of Poly herbal hair oil.

Drug with ethanol ether mixture (µg/ml)	Absorbance	Radical Scavenging Activity (%)	IC_{50}
20	0.254	30.82	
40	0.342	41.50	
60	0.445	54.01	27.05 (µl/ml)
80	0.543	65.77	
100	0.642	77.91	
Ascorbic acid	0.07	84.95	

Generation of free radicals produces oxidative stress. Oxidative stress damages the cellular structures and it may be considered as a factor of hair loss. The association between hair loss and oxidative stress and hair loss was reported by Bahta et al. [12]

In the present work the antioxidant potential of formulated herbal oil was evaluated by DPPH radical scavenging activity. The results of DPPH radical scavenging activity was given in the table 4. Based on IC 50 values, formulated poly herbal hair oil showed more scavenging activity which was compared with the standard ascorbic acid.

CONCLUSION

Herbal remedies are acceptable and more safer with less side effects than synthetic one. Hair oil is very important for the treatment of hair related problems. The various constituents in the plant extract helps in reduction of hair fall and regrowth of hairs. Formulated herbal hair oil is rich in antioxidants, flavanoids and terpenoids. Parameters which are evaluated for the finished product are within the acceptable values. Hence it is concluded that the prepared herbal oil promotes hair growth, prevents premature greying of hair and in the treatment of dandruff.

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