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(RESEARCH ARTICLE)

Development and Assessment of Polyherbal Hair Mask

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Abstract

Young generation is facing serious hair problems due to many lifestyle changes such as fatigue, stress, poor diet and different hair coloring techniques. Strengthening hair follicles is important for improving hair growth and preventing hair loss. Hair is the most fragile part of the body. Healthy hair improves the appearance of the individual. The purpose of using herbal hair mask is to remove dirt and dandruff, strengthen the hair and darken the hair color. The hair mask containing only the natural ingredients from plant source will treat hair problems without damaging hairs and with no adverse effects as of synthetic preparations. The mask is completely chemical free. The combination of several such ingredient of herbal origin has made it possible to secure highly effective dry powder hair mask. The formulation at laboratory scale was done and evaluated for number of parameters to ensure its safety and efficacy.

Keywords: Hair mask; Nourished; Dandruff; Graying

1. Introduction

Healthy hair improves the appearance of the individual and it builds confidence in the person. Skin and hair contribute immensely in human communication. Hair length, color, and style play an important role in people's physical appearance and self-perception. It requires special care to maintain the health of hair.[1] Pollutants, weather, use of heat appliances such as hair dryers, straighteners, and curling irons exposure to UV rays, use of strong shampoos, use of medical treatments, too much styling, and some other causes are responsible for hair damage .[2] Therefore, the hair will be dry and dull. Split ends, rough texture, and itchy scalp are also signs of damaged hair. Under these conditions, the demand for outsourced products has increased over time. Hair Mask is a hair treatment for men and women that leaves hair shinier, smoother, nourished and moisturized. The purpose of using herbal hair mask is to remove dirt and dandruff, strengthen the hair and darken the hair color. Over the synthetic hair masks, the herbal hair masks are safe, free from chemicals, causes no adverse effects. This herbal hair mask powder can be mixed with yogurt or curd. Olive oil and vitamin E oil can also be incorporated in small quantities which nourishes the hair, to make paste for easy application and uniform distribution.

2. Ingredients

2.1. Hibiscus

Hibiscus is an excellent herb for hair care. Hibiscus is rich in Calcium, Phosphorus, Iron, Vitamin B1, Vitamin C, Riboflavin and Niacin, which promotes hair growth and decrease premature graying of hair. This reduces dandruff. Hibiscus exhibits antioxidant properties by producing flavonoids such as anthocyanins and other phenolic compounds. It can be used to rejuvenate the hair by conditioning it.[3,4]

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Figure 1 Hibiscus powder

2.2. Custard apple pulp powder

It also helps to deal with premature greying of hair. Custard apple is a great natural source of copper and gives hair the dark melanin color. To have thick, long, shiny and lustrous hair, one can apply the fruit paste on the hair loss when applied on the scalp. The considerable in the amount of iron in custard apple improves blood circulation, in the scalp stimulating the follicle to promote hair growth.[5]



Figure 2 Custard apple powder

2.3. Curry leaves

Curry leaves contain proteins and beta carotene which help to prevent thinning of hair and hair fall and helps to restore natural color of hair. Curry leaves are also rich in antioxidants, these anti oxidants neutralize free radicals and keeps the hair healthy and strong.[6,7]



Figure 3 Curry leaves powder

2.4. Methi leaves

Methi leaves contain alkaloids, including trigonelline, gentianine and carpaine compounds. Methi leaves are extremely effective against hair fall, dandruff and help to reverse baldness and hair thinning. Methi leaves contain proteins and nicotinic acid which are a great source for hair growth.[6,8]



Figure 4 Methi leaves powder

2.5. Aloe Vera

Aloe Vera is a succulent plant species of the genus aloe. Having some 500 species. It is used in many consumer products, including beverages, skin lotion, cosmetics, ointments or in the form of gel for minor burns and sunburns. The name derives from Latin as aloe and vera ("true"). Aloe vera is the most beneficial for our hair. It Stimulate hair growth ,add shine and strength ,Hydrate hair , Anti fungal and anti dandruff properties, stops the hair fall.[9,10]



Figure 5 Aloe vera powder

3. Methodology

Table 1 Composition of Hair mask

Sl.no	Ingredients	Quantity
1	Hibiscus	15g
2	Custard apple pulp powder	10 g
3	Curry leaves	8 g
4	Methi leaves	7 g
5	Aloe Vera	10 g

3.1. Method:[11]

The herbal ingredients are collected from the local market and medicinal plant garden of our college, shade dried and grinded separately to form powder.

Each Herbal powder is passed through sieve no. 80 to get fine powder.

Mix accurately weighed ingredients according to the composition.

Store in a glass container.

3.2. Evaluation of Herbal hair mask

Prepared herbal hair mask is evaluated for different parameters.

3.2.1. Organoleptic evaluation : .[12,13]

In this evaluation study, parameters like color, odour, texture and appearance of the product is evaluated.

3.2.2. Physicochemical Evaluation

PH

PH of aqueous solution of the formulation was measured by using a calibrated digital PH meter.

Loss on drying

Weigh about 1.5 gm of the powdered drug in a porcelain dish. Dry in the oven at 100° C or 105° C, until two consecutive weighing do not differ by more than 0.5 gm. Cool the desiccators and weigh. The loss in weight in usually recorded as moisture.

Ash content

Place about 2-4gm of the ground air-dried material, accurately weighed, in previously ignited and tared crucible (usually of platinum or silica). Spread the material in an even layer and ignite it by gradually increasing the heat to 500-600° C until it turns white, indicating the absence of carbon. Cool in a desiccator and weigh. If the carbon free ash cannot be obtained in this manner, cool the crucible and moisten the residue with about 2ml of water or a saturated solution of ammonium nitrate. Dry on a water-bath, then on a hot plate and ignite to constant weight. Allow the residue to cool in a suitable desiccator for 30 min and then weigh without delay. Calculate the content of total ash in mg per gm of air dried material.

3.2.3. Rheological Evaluation: .[14,15]

Tapped density

Tapped density is an increased bulk density attained after mechanically tapping a container containing the powder sample. After observing the initial powder volume or mass, the measuring cylinder or vessel is mechanically tapped for 1min and volume or mass readings are taken until little further volume or mass change was observed. It was expressed in grams per milliliter.

Tapped Density = Mass / Tapped Volume

Bulk density

Bulk density is ratio between the given mass of a powder and its bulk volume. Required amount of the powder of the is dried and filled in a 50 ml measuring cylinder up to 50 ml mark. Then the cylinder is dropped onto a hard wood surface from height of 1 inch at 2 sec intervals. The volume of the powder is measured. Then the powder is weighed. This is repeated to get average values.

Bulk density = Mass / Bulk Volume

Angle of repose

It is defined as the maximum angle possible in between the surface of pile of powder to the horizontal flow. Required amount of dried powder is placed in a cylinder tube open at both ends is placed on a horizontal surface. Then the funnel should be raised to form a heap. The height and radius of heap is noted and recorded. For the above method, the angle of repose can be calculated by using the formula.

 $\theta = \tan(h/r)$

 $\boldsymbol{\theta}$ - angle of repose

h- height of the heap

r - radius of the base

Patch test

The small amount of moistened formulation is applied on the surface of the hand and the effects have been observed for irritancy and itchiness caused by formulation.

Stability Test

The powdered formulation was stored for some time under different temperatures (35°C and 40°C) and humidity conditions, and the change in the physical properties was observed.

4. Results and Discussion

4.1. Organoleptic evaluation

Organoleptic properties like colour, odour, texture and appearance are evaluated and the results are listed below

Table 2 Organoleptic evaluation

Sl no	Parameters	Results
1	Colour	Greenish brown
2	Odour	Characteristic
3	Texture	Fine
4	Appearance	Powder

4.2. Physicochemical Evaluation

Physicochemical properties like pH, Loss on drying and Ash content are determined and the results are listed below.

Table 3 Physicochemical evaluation

Sl no	Parameters	Results
1	рН	6.7
2	Loss on drying	1.28 %w/w
3	Ash content	2.8 %w/w

4.3. Rheological Evaluation

Rheological properties like Tapped density, Bulk density and Angle of repose are determined and the results are mentioned below.

Table 4 Rheological evaluation

Sl no	Parameters	Results
1	Tapped density	0.45g/ml
2	Bulk density	0.5g/ml
3	Angle of repose	40.80

4.4. Patch test

Small amount of product is applied on the skin and observed for Irritation,

Redness and Swelling. Observations are reported below.

Table 5 Patch test

Sl no	Parameters	Results
1	Irritation	Nil
2	Redness	Nil
3	Swelling	Nil

4.5. Stability Test

Product is tested for its stability by storing in different temperatures and Observations are reported below.

Table 6 Stability test

Sl no	Parameters	Results
1	Change in Colour	Nil
2	Change in Odour	Nil
3	Change in Texture	Nil
4	Change in Appearance	Nil

The formulated product is evaluated for different parameters like Organoleptic properties, Physicochemical properties, rheological properties, also tested for Irritation, Redness and Swelling. Stability in colour, odour, texture, and Appearance is tested. The results found are highly satisfactory. The said are upto the mark of utility of the product with safety and promising results.

5. Conclusion

Present research lists the herbal drugs which have been used from long years by our elders and also with a proof of complete benefits ,zero adverse effects. Hibiscus is an excellent herb for hair care. Hibiscus is rich in Calcium, Phosphorus, Iron, Vitamin B1, Vitamin C, Riboflavin and Niacin, which promotes hair growth and decrease premature graying of hair. This reduces dandruff. Custard apple is a great natural source of copper and gives hair the dark melanin color. Curry leaves contain proteins and beta carotene which help to prevent thinning of hair and hair fall and helps to

restore natural color of hair. Methi leaves contain alkaloids, which are extremely effective against hair fall, dandruff. Aloe vera is the most beneficial for our hair. It Stimulate hair growth ,add shine and strength ,Hydrate hair , Anti fungal and anti dandruff properties, stops the hair fall.

Compliance with ethical standards

Disclosure of conflict of interest

No conflict of interest to be disclosed.

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