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Formulation and Evaluation of Herbal Hair Pack

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ABSTRACT
Hair masks are a solution to hair problems such as dandruff, frizziness, brittleness, premature graying. Beard products are gaining popularity among people because of their many benefits. With so many types of hair masks on the market, it can be confusing to choose the one that suits hair lines and has fewer side effects. The ingredients in the hair mask are added according to what is known to be good for the hair. The purpose of using a hair mask is to remove dirt and dandruff, strengthen the hair and darken the hair color.
The mask is completely chemical free. It contains only natural ingredients that will not harm your hair. Hair root is the most important organ in animals, it determines the external appearance, makes gender discrimination, provides thermal protection and plays a role in defense. Young people are starting to face serious hair problems due to many lifestyle changes such as fatigue, stress, poor diet and different hair coloring techniques. Alopecia is non-temporary hair loss in most cases.
Strengthening hair follicles is important for improving hair growth and preventing hair loss. Hair is the most fragile part of the body. That's why we've created a hair mask recipe to properly care for them. The substances in the hair are added knowing the benefits that can strengthen and darken the hair.
Keywords: curry leaves, Jatamansi, anti dandruff, hair growth herbal hair mask

I. INTRODUCTION:

Hair is one of the best gifts a person has. It is important to keep the hair nice and beautiful. Human hair requires special care and maintenance. Hot and cold weather, improper use of heat appliances (such as hair dryers, straighteners, and curling irons), exposure to UV rays from the sun, excessive use of alcohol and detergents, use of medical treatments, too much styling, and some causes hair damage from stress. 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. Usually in paste form, it strengthens the roots, moisturizes the scalp, heals damage and gives good results for dandruff-free hair. A beard is essential for dry, damaged, curly or very long or thin hair.

Gray hair is now common among young and old. This is because there are many pollutants that damage human hair, damaging the scalp and hair [2]. Yeasts such as

Malassezia feed on oil from the scalp of most adults, and dry skin sensitive to hair care products or other skin conditions such as contact dermatitis, psoriasis, and eczema also cause dandruff [1].

Important studies on the preparation and evaluation of herbal hair masks. Unlike drugs, hair masks provide recovery treatment by penetrating deep into the hair shaft and solving the problem, while the latter leaves the hair softer and more manageable.

The hair mask should be used once or twice a week, depending on the condition of the hair, after shampooing and before the conditioner. Hair masks can be used for hair growth, dandruff, dry and frizzy hair, hair loss, damaged hair and many more.

Uses of herbal plants:-
1.Curry leaves:

Most of the population relies upon herbal

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medicines because they have been considered as a safe, effective and economical. Curry leaves is one such medicinally important herb which is widely used as a spice, condiment and also used to treat various diseases in india.

Anti-dandruff, prevent premature greying, stimulate hair growth, rejuvenation of hair follicle, strengthening of hair shaft, prevents hair thining. It has a rich source of beta-carotene protein. They also contain amino acids and antioxidants which strengthen the hair follicles and moisturize the scalp [3,4].

2. JATAMANSI

Jatamansi is an ayurvedic herb found all year round in the Himalayas. Belonging to the valerian family, the jatamansi plant grows best at the peak of 3000-4000 meters. Jatamansi plant is classified as a critically endangered species in IUCN list of medicinal plant. Jatamansi oil can be mixed with homemade hair tonic or hair oil to promote hair growth. Today, maintaining healthy and thick hair is a tough task. With women, men also go through hair and scalp damage like dandruff, frizzy hair, hair loss, vitamins deficiency, hormonal imbalance, greying, and others. As discussed above, jatamansi use for hair improves hair quality and texture[5,6].

3.GILOY

Similar to its skin benefits, giloy's potential benefits for hair stem from its antioxidant content. Antioxidants nourish and shield hair in much the same way they do for skin: by working against the actions of free radicles.

When munched on or applied topically, the antioxidants in giloy may benefits your hair by- Promoting hair growth, strengthening and protecting hair, restoring and repairing damaged hair, improving scalp health.

4.METHI LEAVES

Malassezia spp. Are commensal yeast that can cause cutaneous aliments such as danfruff and seborrheicdermatitis.Methi leaves contain alkaloids, including trigonelline, gentianine and carpaine compounds. The seeds also contain fiber fenugreekine a compound that may have hypoglycemic activity. Methi leaves are extremely effective against hair fall, dandruff and help to reverse bladness and hair thinning. Methi leaves contain proteins and nicotinic acid which are a great source for hair growth [7,8].

5.MINT LEAVES

Traditional plant remedies have been used for centuries in the treatment for hair loss, but only few have been scientifically evaluated[9]. Principal ingredient of peppermint oil, menthol, is primarily responsible for its beneficial effect[10]. In vitro, peppermint has been reported to show anti-inflammatory, anti-microbial, and anti-fungal activities as well as strong antioxidant activity [11,12].

OBJECTIVE:

1. The goal of this study was to use various herbs

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to create a herbal hair pack for general use (hair application)
2. A herbal hair pack is a light and gentle treatment for hair.
3. The non-toxic nature of herbal based cosmetics is well known.
4. It nourishes both the skin and the hair on the scalp.
5. It removes excess oil from the scalp, which helps to treat hair problem.

II. MATERIAL AND METHOD:

1.Material:-

All the materials used in the present study i.e., Curry leaves, Jatamansi, Giloy, Mint leaves, Methi leaves were purchased from local market, in the form of dried powder. The details of the plant material used for the formulation of hair pack are mentioned.

2.Method of preparation:-

- **Preparation of the herbal powder**

All the herbal ingredients are in dry form and grinded to make fine powder.

- **Weighing**

All the required herbal powders for hair pack preparation were accurately weighed individually by using digital balance.

- **Mixing**

All these fine ingredients were mixed thoroughly by mixer to form a homogenous fine powder.

- **Sieving**

This fine powder was passed through sieve no. 80, to get the sufficient quantity of fine powder.

- **Collection and Storage**

The powder mixture was collected and store in suitable glass container and used for doing evaluation Parameters.

FORMULATION OF HERBAL HAIR PACK

Table no. 1

Sr.No.	Name Of Ingredient	Batch A	Batch B	Batch C	Batch D	Batch E
1.	Curry leaves	22gm	21gm	20gm	19gm	23gm
2.	Mint leaves	10gm	9gm	11gm	8gm	10.5gm
3.	Methi leaves	6gm	7gm	5.5gm	5gm	6.5gm
4.	Jatamansi	6gm	8gm	7.5gm	9gm	5gm
5.	Giloy	6gm	5gm	7gm	9gm	5gm

3. Evaluation parameter

A.Organoleptic Evaluation

By utilizing sensory organs like eyes or nose, the examination of the formulation is performed under this evaluation, and it includes macroscopic charateristics of the drug or product, such as colour, odour, texture and appearance.

B. Physicochemical Evaluation

a) PH

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

b) Loss on drying

Weight about 1.5 gm of the powered drug into a weighed flat and thin porcelain dish. Dry in the oven at 100^{o} C or 105^{o} C, until two consecutive weighing do not differ by more than 0.5 gm. Cool in desiccators and weight. The loss in weight in usually recorded as moisture.

c) Ash content

Total Ash Value

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 500-6000^{o}C until it is 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.

C. Phytochemical Evaluation

Various tests were performed, to identify

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the phytoconstituents present in the products and their effect is shown on the body. Every plant exhibits certain phytochemical properties, which show a number of beneficial effects.

a) Detection of carbohydrate

1. Molisch's Test:-

To 2-3 ml aqueous extract, add few drops of alpha-napthol solution in alcohol, shake and conc. H_2SO_4 from sides of the test tube violet ring is formed at the junction of two liquids.

2. Fehling's Test:-

Mix 1ml fehling A and 1ml fehling B solutions, boil for 1min. add equal volume of test solution. Heat in boiling water bath for 5-10 min. First yellow, then brick red ppt is observed.

b) Detection of alkaloids

1. Hager's Test:-

2-3 ml filtrate with hagers reagent gives yellow ppt.

2. Mayer's Test:-

2-3 ml filtrate with few drops mayers reagent gives creamy ppt.

c) Detection of volatile oil

2 to 4gm of hair mask on treatment with alcoholic solution of sudan III develops red colour in presence of volatile oils.

d) Detection of protein

Biuret test: 2 to 3 ml test solution add 4% NAOH and few drops of 1% C_uSO_4 solution. Violet or pink Colour appears.

e) Foam Test

Shake the drug extract or dry powder vigorously with water. Persistent stable foam observed.

D. Rheological Evalutaion

a) 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

b) 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

c) Angle of repose:-

It is defined as the maximum angle possible in between the surface of pile of powder to the horizontal flow.

It 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.

$\theta = \tan^{-1}(h/r)$

θ - angle of repose
h- height of the heap
r - radius of the base

E. Microbial Assay

1.To prepare and sterilize nutrient broth:-

For 250 ml
1.Beef extract :- 2.5 g
2.Peptone :- 2.5 g
3.Sodium chloride :-1.25 g
4.Distilled Water :-250 ml
5. 1 to 2 gm of Nutrient Agar

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2.Procedure:-

Weigh all additives

↓

Add all weighed additives in suitable container

↓

Dissolve with the aid of heat with stirring

↓

Adjust to ph 8.0 – 8.4 with 5M sodium hydroxide

↓

Boil for 10 min

↓

If necessary filter it and adjust to ph 7.3 – 7.4

↓

Sterilize by autoclave; using lb pressure at 115^0 C for 30 min

3.Aseptic transfer of liquid culture media to petri dish

Insert the pipette into the chuck of the pipette pump in aseptic area

↓

Hold the culture tube in one hand and the pipette pump in the other hand and remove the tube culture with the finger of the pipetting hand

↓

½ of the petri- dish and pour the culture and slightly shake it

↓

Recape the tube and place in tube rack

4.For preparation of colonies

Fungus grow on bread or stale roti

↓

Remove the fungus and prepare the solution

↓

After that make well on culture media

↓

Then pour the fungal solution on agar and pour the formulation solution in the well

↓

Put the plate in the incubator for 48 to 72 hr

↓

Observe the growth of fungus and inhibition of fungal growth

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5.Measuring zone size

1. Following incubation, measure the zone sizes to the nearest millimeter using a rular or caliper, include the diameter of the disk in the measurement.
2. When measuring zone diameters, always round up to the next millimeter.
3. All measurements are made with the unaided eye while viewing the back of the petri plate dish. Hold the plate a few inches above a black, non-reflecting surface illuminate with reflected light.
4. View the plate using a direct, vertical line of sight to avoid any parallax that may result in misunderstanding.
5. Record the zone size on the recording sheet.
6. If the placement of the disk or the size or the size of the zone does not allow you to read the diameter of the zone, measure from the center of the disk to a point on the circumference of the zone where a distinct edge is present (the radius) and multiply the measurement by 2 to determine the diameter.
7. Growth up to the edge of the disk can be reported as a zone of 0mm [14,15,16].

III. RESULT AND DISCUSSION:

1.Organoleptic Evaluation Of Formulation

Table No. 2

Sr.No.	Parameters	Observations
1.	Colour	Greenish
2.	Odour	Characteristic
3.	Texture	Fine
4.	Appearance	Coarse Powder

2.Physicochemical Evaluation Of Single Drug

PH

Ph should range between 6-8.

Table no.3

Sr.No.	Parameters (PH)	Observations
1.	Curry leaves	6.3 to 6.4[13]
2.	Jatamansi	7.5
3.	Giloy	6 to 7
4.	Methi leaves	6 to 7
5.	Mint leaves	6 to 7.5

LOSS ON DRYING

Table no. 4

Sr.No.	Parameters (LOD)	Observations
1.	Curry leaves	6.12 %
2.	Jatamansi	6.68 %
3.	Giloy	6.06 %
4.	Methi leaves	6.50 %
5.	Mint leaves	5.98 %

ASH VALUE

Table no.5

Sr.No.	Parameters (Ash Value)	Observations
1.	Curry leaves	14.33 %
2.	Jatamansi	8.66 %
3.	Giloy	14 %
4.	Methi leaves	13.66 %
5.	Mint leaves	10 %

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4.Physicochemical evaluation of formulation

Table NO.6

Sr.No.	Parameters	Observation
1.	PH	6.5
2.	LOD (loss on drying)	1.42 %
3.	Ash value	3.8 %

5.Phytochemical Evaluation of formulation

Table No. 7

Sr. No.	Test	Purpose for detection	Result
1.	Molish's test	Presence of carbohydrate	Positive
2.	Fehling's test	Presence of carbohydrate	Positive
3.	Hagers's test	Presence of alkaloid	Positive
4.	Mayer's test	Presence of alkaloid	Positive
5.	Volatile oil test	Presence of volatile oil	Positive
6.	Biuret test	Presence of proteins	Positive
7.	Foam test	Presence of saponin	Negative

6.Rheological Evaluation (Individual Drug)

Table No. 8

Sr. No.	Bulk Density	Observation
1.	Curry leaves	0.37
2.	Jatamansi	0.28
3.	Giloy	0.39
4.	Methi leaves	0.22
5.	Mint leaves	0.25

Table No. 9

Sr.No.	Tapped Density	Observation
1.	Curry leaves	0.4
2.	Jatamansi	0.4
3.	Giloy	0.5
4.	Methi leaves	0.30
5.	Mint leaves	0.6

Table No. 10

Sr.No.	Angle of repose	Observation
1.	Curry leaves	1.16
2.	Jatamansi	1
3.	Giloy	1
4.	Methi leaves	1.2
5.	Mint leaves	1.5

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Rheological Evaluation (formulation)

Table No. 11

Sr. No.	Parameters	Observation
1.	Bulk density	0.41
2.	Tapped density	0.5
3.	Angle of repose	1.30

MICROSCOPIC CHARATERISTICS: (Individual drug)

1.Curry leaves

Table No.12

Sr.No.	Reagent	Observation	Charateristics
1.	Phloroglucinol + Conc HCL (1:1)	Pink	1.lignified cells 2.Pericyclic fibre 3.Stone cell (present) 4.Cork cell
2.	Iodine	Blue	Starch (present)
3.	Ruthenium red	Pink	Mucilage cells (present)
4.	Acetic acid	Insoluble	Calcium oxalate crystal (present)
5.	Dil.HCL	Soluble	Calcium oxalate crystal

2.Jatamansi

Table No.13

Sr.No.	Reagent	Observation	Charateristics
1.	Phloroglucinol +Conc HCL (1:1)	Pink	1.Lignified cells 2.Pericyclic fibre (present) 3.Stone cells 4.Cork cells
2.	Iodine	Blue	Strach (present)
3.	Ruthenium red	Pink	Mucilage cells (present)
4.	Acetic acid	Insoluble	Calcium oxalate crystal (present)
5.	Dil.HCL	Soluble	Calcium oxalate crystal

3.Giloy

Table No.14

Sr.No.	Reagent	Observation	Charateristics
1.	Phloroglucinol +Conc HCL (1:1)	Pink	1.Lignified cells 2.Pericyclic fibre 3.Stone cells 4.Cork cells
2.	Iodine	Blue	Starch (present)

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3.	Ruthenium red	Pink	Mucilage cells (present)
4.	Acetic acid	Insoluble	Calcium oxalate crystal (present)
5.	Dil.HCL	Soluble	Calcium oxalate crystal

4.Methi leaves

Table No.15

Sr.No.	**Reagent**	**Observation**	**Charateristics**
1.	Phloroglucinol+Conc HCL (1:1)	Pink	1.Lignified cells (present) 2.Pericyclic fibre 3.Stone cells 4.Cork cells
2.	Iodine	Blue	Starch (present)
3.	Ruthenium red	Pink	Mucilage cells (present)
4.	Acetic acid	Insouble	Calcium oxalate crystal (present)
5.	Dil.HCL	Soluble	Calcium oxalate crystal

5.Mint leaves

Table No.16

Sr.No.	**Reagent**	**Observation**	**Charateristics**
1.	Phloroglucinol +Conc HCL (1:1)	Pink	1.Lignified cells 2.Pericyclic fibres 3.Stone cells (present) 4.Cork cells
2.	Iodine	Blue	Strach (present)
3.	Ruthenium red	Pink	Mucilage cells (present)
4.	Acetic acid	insoluble	Calcium oxalate crystal (present)
5.	Dil.HCL	Soluble	Calcium oxalate crystal

Microbial Assay:-

The antifungal activities were evaluated by measuring the zone of inhibition (in mm).
The results of evaluations are shown in Table No.17

Sr. No	Fungus (Rhizopus)	Zone of inhibition (in mm)
1.	F1	5 mm
2.	F2	16 mm
3.	F3	17 mm

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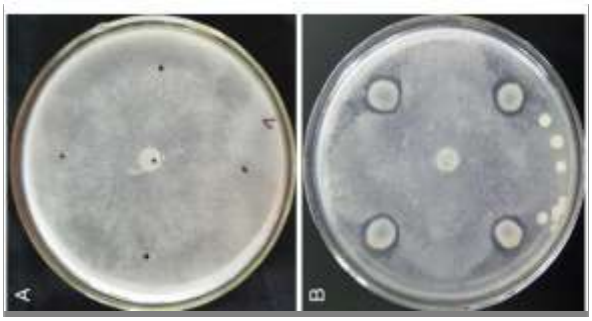
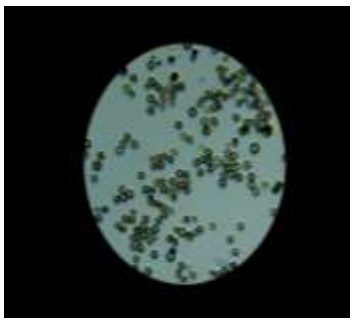
4.	F4	18 mm
5.	F5	19 mm



Staining of rhizopus fungus:



IV. CONCLUSION AND SUMMARY

This study presents a number of plant drugs with proven efficacy in hair care preparation. A herbal hair mask treats dandruff , excess oil, dirt, frizziness and also other hair related problem in a very easy manner. Herbal based cosmetics are popular for their non-toxic nature. This hair mask helps to nourishes the skin of the scalp. It treats dandruff and other things by removing excess oil from the scalp. If this mask used regularly it leads healthy hair. Nowadays natural remidies are used in more amount in all over world, because of their safe and less side effects compared to chemical based products. Herbal formulation can be prepared at home with the use of available ingredients. It is an try to prepare the herbal hair mask with the rich qualities of plants which are available easily and use for hair care formulations. Different parameters like organoleptic evaluation, ph, loss on drying, ash content, colour, odour, texture, phytochemical evaluation, microscopic charateristics and microbial assay is use for evaluation and which shows the significant results. In the batch x more significant results are obtained than other batches. The prepared formulation shows the antifungal activity against fungus rhizopus. This study shows the safety of product.

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