

(Research Article)

Formulation and Evaluation of Polyherbal Hair Mask

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Abstract: Polyherbalism is a key traditional therapeutic herbal strategy that involves combining several medicinal herbs to increase therapeutic effectiveness. A Hair mask is applied to hair and scalp to nourish, moisturize and protect the hair. Herbal hair cosmetics are made with herbs that have antibacterial, anti-inflammatory and antioxidant properties. The purpose of using hair mask is to remove dirt and dandruff, strengthen and darken the hair colour. Using the natural Ingredients from the plant source will treat Hair problems without damaging hairs and with no adverse effects. To prepare this Herbal hair mask, various plant based ingredients are chosen. The formulation process focused on optimizing the combination of these ingredients to create a highly effective hair mask. The formulation of this Hair mask was done at Laboratory scale and it's evaluated for it's number of parameters for the safety and efficacy

Keywords: Polyherbal, Herbs, Hairmask

I. INTRODUCTION

Hair is a protein filament that grows from follicles found in the dermis. Hair promotes well-being in people and also protects the scalp from solar radiation and mechanical abrasion. Human hair is made up of follicles that are in the Anagen, Catagen, Telogen, and Exogen stages. A hair mask is a type of hair product that deeply hydrates and nourishes hair from the roots to the tips by reducing dandruff, herbal hair masks help your hair smooth the itchy, greasy, and flaky scalp, offering you nutritious hair and an aesthetically pleasing, tingle-free scalp. Also, without endangering or changing hair, it serves as a conditioning agent.

The main ingredients in the preparation of herbal hair mask are pineapple powder, guava leaves powder, Hibiscus powder, Amla powder and many other herbs have been chosen to create the hair mask based on their traditional uses and scientific support for modern applications. There are numerous kinds of masks on the market, however many of them include chemicals. So, we used herbs to create a product. Making this mask is Quite simple. Because they are readily available, inexpensive, and safe, herbs are frequently employed as therapeutic agents.

This guide, we'll explore the fascinating world of natural hair masks, delving into their benefits, ingredients, and simple recipes you can whip up in your own kitchen. Say goodbye to dull, lifeless locks, and embrace the nourishing embrace of nature with these Rejuvenating hair treatments. An herbal hair mask is a natural and nourishing treatment for your hair, typically made from a combination of plant-based ingredients Known for their beneficial properties.

These masks are often used to improve the health and appearance of hair, addressing issues such As dryness, damage, or promoting overall hair growth. Natural herbal hair masks have long been cherished for their ability to rejuvenate and nourish hair, providing a holistic approach to hair care. In a world where the beauty industry is increasingly embracing the power of botanicals and natural remedies, herbal hair Masks have gained popularity for their potential to address a range of hair concerns while avoiding the use of harsh chemicals.

Hair Growth Cycle



Fig No.1.(Hair Growth Cycle)

Objectives and Benefits of Polyherbal hair mask:

- To prepare the polyherbal hair mask with natural ingredients.
- To formulate the non-expensive, non-toxic, natural effective herbal hair masks with numerous activities like promoting hair growth, conditioning, nourishment.
- To prepare easy to use polyherbal hair mask.
- To prepare the hair mask which reduces the hairfall, removes dandruff and prevents premature greying of hair.
- It calms the scalp and reduces the irritation and also helps in reducing the greasy and flaky scalp.
- Polyherbal hair mask are also used to treat fungal infections.

Importance of Polyherbal Hair Mask:

1. Natural and Chemical-Free: Made from herbal ingredients, this hair mask is free from harsh Chemicals, making it suitable for all hair types.
2. Promotes Hair Growth: The combination of herbs helps stimulate hair growth, strengthen hair Follicles, and reduce hair loss.
3. Improves Scalp Health: The antifungal and antibacterial properties of the herbs help soothe and Calm the scalp, reducing itchiness and dandruff.
4. Repairs and Nourishes Hair: The mask provides intense moisturization, repairing damaged hair And leaving it soft, smooth, and manageable.
5. Cost effective and Easy to use: As it is easily available in market.

Ingredients:

1. Pineapple powder



Fig No.2. (Pineapple powder)

Pineapple is rich in bromelain which is an anti-inflammatory enzyme. Bromelain is effective in the treatment of dandruff and other conditions of the scalp. Pineapple powder can remove dead skin cells and excess oil from the scalp, which can help prevent clogged hair follicles and hairfall. It promotes hair growth it contains vitamin C, which helps to produce collagen that strengthens hair and prevents breakage. Pineapple powder has natural antifungal properties that can help control yeast growth, a common cause of dandruff. It contains Vitamin C and antioxidants that can help boost hair's natural shine.

Biological source	Ananas comosus
Family	Bromeliaceae
Order	Poales
Genus	Ananas

2. Guava Leaves Powder



Fig No 3. (Guava leaves powder)

Guava leaves powder contains Vitamin C which boosts collagen activity which helps in hair grow faster and healthier. It contains hair loss by nourishing hair follicles and protecting them from damage. The antimicrobial properties that can help prevent scalp infections that can lead to hair loss. It improves hair texture and making it softer, smoother, shinier and more manageable. It controls dandruff and maintains flake-free scalp sun protection. It removes scalp build-up and prevents oiliness.

Biological source	Psidium guajava
Family	Myrtaceae
Order	Myrtales
Genus	Psidium

3. Hibiscus flower powder

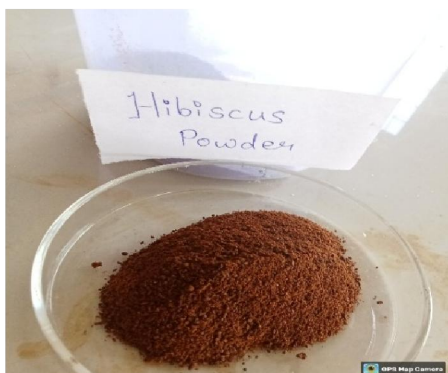


Fig No.4. (Hibiscus leaves powder)

It contains tannins,anthroquinones,quinines,phenols,flavonoids,alkaloid,saponins.Acts as a scalp moisturizer 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. It also promotes hair growth because hibiscus is high in amino acid which are essential for synthesis of keratin.Hibiscus or “Gudar” is the most beneficial Ingredient in Hair. It is used for hair Growth, it regrowth and Hair loss.Hibiscus contains amino acids, vitamins A and C, alpha hydroxy acids, and other nutrients That are very beneficial to hair and scalp.

Biological source	Hibiscus rosa-sinensis
Family	Malvaceae
Order	Malvales
Genus	Hibiscus

4. Amla Powder



Fig No.5. (Amla powder)

Amla contains Vitamin C, Vitamin A, polyphenols, amino acids, proteins, carbohydrates, calcium , potassium, magnesium and iron etc. known as source of vitamin C. It is packed with many health benefits. Powdered amla is used as a gooseberry. Amla is a rich essential ingredient in Hair tonic to promote hair growth and improve hair Pigmentation. It strengthens and nourishes the roots, improves the colour and radiance. A very popular application is to reduce baldness and hair loss. This quality is due to the tannin content in the form of antioxidants. It treats bacterial hair and scalp infections.

Biological source	Emblica officinalis
Family	Euphorbiaceae
Order	Euphorbiales
Genus	Emblica

5. Curry Leaves Powder



Fig No.6. (Curry leaves powder)

Curry leaves are high in Calcium, proteins, Vitamin B and C and antioxidants. It has anti-hair loss properties. It also prevents premature greying of hair. It reduces the frizzy hair. It helps to maintain natural hair tone. Curry leaves can therefore be used as a treatment for Dandruff. The elements of heat, pollution, and hair care Product chemicals expose your hair to ongoing harm. Curry Leaves, which are rich in alkaloids and antioxidants, aid in hair Restoration. Curry leaves include beta-carotene, proteins, and Alkaloids that help preserve natural hair tone. Encouraging Hair development and halting hair thinning and loss. Curry Leaves' natural components help to keep your hair shiny and Lustrous, and their antioxidant qualities help with dry hair. Curry leaves aid in reducing hair frizz. The curry's Antioxidants aid in hydrating the scalp and removing damaged Hair follicles.

Biological source	Murraya koenigii
Family	Rutaceae
Order	Sapindales
Genus	Murraya

6. Fenugreek seeds powder



Fig No.7. (Fenugreek seeds powder)

It contains saponins, proteins, Nicotinic acid, steroids, minerals and vitamins. It has anti-inflammatory and scalp soothing properties and it improves blood circulation in the scalp. It has hair growth simulating properties. Methi is the hindi word of Fenugreek. Methi seeds are considered to be one of the most effective remedies to treat hair fall issue. Fenugreek has anti-inflammatory and antibacterial properties that can help soothe scalp irritation, reduce Dandruff, and prevent scalp infections. Scalp Inflammation: Fenugreek has anti-inflammatory properties that can help soothe a dry, irritated scalp. It can also help Unclog hair follicles, promoting healthier hair growth.

Biological source	Trigonella foenum-graecum
Family	Leguminosae
Order	Fabales
Genus	Trigonella

7. Ginger Powder



Fig No.8. (Ginger powder)

It is rich in minerals and has essential oils. It decreases dryness, flaky scalp and irritability. It has antibacterial and anti-inflammatory properties. It smoothens the hair. Ginger is a beneficial ingredient in hair masks due to its stimulating properties and rich nutritional content. Here are Some benefits of using ginger in a hair mask: Stimulates Hair Growth: Ginger contains compounds that help improve blood circulation to the scalp, which can stimulate Hair growth. Adds Shine: Ginger can help improve the health of the hair shaft, resulting in shinier, healthier-looking hair. Improves Scalp Health: It can improve scalp health by removing impurities and nourishing the scalp.

Biological source	Zingiber officinale
Family	Zingiberaceae
Order	Zingiberales
Genus	Zingiber

8. Nutmeg oil



Fig No.9. (Nutmeg oil)

It promotes hair growth and it has Antifungal properties. It controls dandruff. It improves blood circulation in the scalp which reduces the hair fall. It has antimicrobial properties which can help to keep the scalp clean and prevent dandruff, which can lead to hair loss. Nutmeg is high in calcium, magnesium, iron and vitamins B and C, which can all be beneficial for the scalp and hair. The antioxidant properties of the oil can also help to strengthen follicles, which may also be able to stimulate growth.

Biological source	Myristica fragrans
Family	Myristicaceae
Order	Magnoliales
Genus	Myristica

9. Coconut oil



Fig No.10. (Coconut oil)

It is good for hair and moisturize the scalp and improves the scalp health . It fight against bacteria. It is a natural way to help hair grow longer ,thicker and faster. Coconut oil is a popular ingredient in hair masks due to its numerous benefits for hair and scalp health. Here are someof its uses and benefits: Strengthening: Coconut oil contains lauric acid, which can penetrate the hair shaft and strengthen hair from within, reducing Breakage and split ends. Promoting Hair Growth: Some studies suggest that coconut oil can help promote hair growth by penetrating the hair folliclesAnd preventing protein loss.

Biological source	Cocos nucifera
Family	Arecaceae
Order	Arecales
Genus	Cocos

10. Onion oil



Fig No.11. (Onion oil)

It promotes hair growth reduces dandruff and other scalp infections. It makes the hair shinier, healthier and softer and prevents the premature greying of the hair. It also moisturize the scalp. Onion oil contains sulfur, which helps produce collagen, a protein that's essential for healthy hair growth. Onion oil can help strengthen hair roots and minimize hair fall. Onion oil can add shine and improve hair texture. Onion oil's antioxidants can help reverse the effects of premature greying.

Biological source	Allium cepa
Family	Alliaceae
Order	Asparagales
Genus	Allium

Formulation Table:

Sr no.	Ingredients	Quantity	Uses
1	Pineapple powder	15gm	Antifungal
2	Guava leaves powder	8gm	Antibacterial
3	Hibiscus flower powder	5gm	Stimulate hair growth
4	Amla powder	5gm	Antioxidant
5	Curry leaves powder	5gm	Prevents graying of hair
6	Fenugreek seeds powder	4gm	Fights scalp problem
7	Ginger powder	4gm	Anti-inflammatory
8	Nutmeg oil	2ml	Hair growth
9	Coconut oil	5ml	Moisture the hairs

10	Onion oil	3ml	Promotes scalp health
11	Sodium benzoate	2gm	Preservative
12	Methyl paraben	2gm	Preservative

Method of Preparation:

1. Weighing: Each herbal powder was measured accurately using a digital balance. The herbal powder includes like Pineapple powder, Guava Leaves Powder, Hibiscus powder, Amla powder, Curry leaves powder, Fenugreek seeds powder, Ginger powder.

2. Mixing: The powders were thoroughly blended to create a uniform mixture.

3. Sieving: The mixture was sifted through a fine-mesh sieve (#80) to ensure consistency.

4. Storage: The final powder blend was collected and stored in a clean, dry container.

5. Oil Blend Addition: The oil mix that is nutmeg oil, Coconut oil and Onion oil are measured accurately According to Ingredients table and then the blend of oil is prepared and added in above herbal powder mixture to create a uniform paste and also water is added in required quantity.

6. Preservation: Add sodium benzoate and methyl paraben to enhance shelf life.

Hair Mask Application:

1. Take required quantity in a bowl.
2. Apply paste to scalp and hair ends using fingers; gentle massage.
3. Leave on for 25-30 minutes.
4. Wash with diluted shampoo.

Evaluation of Polyherbal Hair mask:

1. Organonoleptic Evaluation

This evaluation involves examining the formulation using our senses, specifically:

- Sight (eyes): checking color and appearance
- Smell (nose): checking odour
- Touch: checking texture

2. Physicochemical Evaluation

The following tests were conducted:

1. pH Test: Measured the pH level of a 1% solution using a digital pH meter.
2. Washability Test: Assessed how easily the formulation can be washed off.
3. Solubility Test: Evaluated how well the formulation dissolves in water.

3. Phytochemical Evaluation

The following tests were conducted to detect various phytochemicals:

1. Carbohydrates

a. Molisch's Test : Take 2-3ml aqueous extract, add few drops of alpha- naphthol solution in alcohol, shake & add Conc. H₂SO₄ from sides of the both sides of the test tubes violet ring is formed at the junction of two liquid.

b..Fehling's Test: Combine 1ml Fehling's A and 1ml Fehling's B solutions. Boil for 1 minute, then add an equal volume of test solution. Heat for 5-10 minutes. A yellow precipitate forms, followed by a brick-red precipitate.

2. Alkaloids Detection

a. Hager's Test: Mix 2-3ml filtrate with Hager's reagent to produce a yellow precipitate.

b. Mayer's Test: Combine 2-3ml filtrate with Mayer's reagent to yield a creamy precipitate.

3. Volatile Oil Detection

Treat 2-4gm of hair mask with an alcoholic Sudan 3 solution. The presence of volatile oils is indicated by a red color.

4. Protein Detection

- a. Biuret Test:** Add 4% NaOH and 1% CuSO₄ solution to 3ml test solution. A violet or pink color appears.
b. Foam Test: Vigorously shake the drug extract or dry powder with water. A persistent, stable foam is formed.

4. Patch Test : A patch test is a skin test used to find the cause of a possible allergic reaction on the skin. Redness, swelling and irritation. Observation are reported below.

Result:

1. Organoleptic Evaluation

Sr no.	Parameters	Observation
1	Colour	Dark green
2	Odour	Pleasant
3	Texture	Smooth
4	Appearance	Coarse paste

2. Physicochemical Evaluation

Sr no.	Parameters	Observation
1	pH	5.8
2	Washability	Easily washable
3	Solubility	Insoluble in water

3. Phytochemical Evaluation

Sr no.	Test	Purpose of detection	Result
1	Molisch's Test	Presence of carbohydrates	Positive
2	Fehling's Test	Presence of carbohydrates	Positive
3	Hager's Test	Presence of alkaloids	Positive
4	Mayer's Test	Presence of alkaloids	Positive
5	Volatile oil Test	Presence of volatile oil	Positive
6	Biuret Test	Presence of protein	Positive
7	Foam Test	Presence of saponin	Negative

5.P atch Test



Fig No.12. (Patch Test).
Before.



Fig No.13.(After patch test)
After

Sr no.	Parameters	Observation
1.	Redness	Negative
2.	Swelling	Negative
3.	Irritation	Negative

II. CONCLUSION

The result of this study suggest that a herbal hair mask in the form of a powder can be made which is Diluted with required amount of water and then applied to hair by hands and rinsed off in half hour to Make hair strong, lustrous, and whatnot by adding natural herbs. Since all of the substances are Natural, there are no known side effects for the skin or hair. Also, composition is stable at room Temperature and all of the ingredients are 100 percent biodegradable. Since, alopecia or hair loss has Become most common now a days due to various factors like altered Metabolism, lack of nutrients and antioxidants, pollution, exposure to sun rays, dust, age, sleep, General health condition, emotional well-being, physical impairment, disease, etc. Therefore, In addition to strengthening hair, the formulation has a variety of other advantages for hair, Including antioxidant (guava, amla powder), conditioning (coconut oil), avoiding alopecia (onion Oil), Anti-inflammatory (ginger powder), nourishment (nutmeg oil), minimising hair loss (fenugreek Oil), Antifungal (pineapple) and strengthening color (curry leaves, hibiscus leaves powder). Thus, we Get multiple benefits from single hair mask. We found that effective property of herbal hair mask and Further studies are needed to be performed to explore more benefits of this herbal hair mask . Consequently, it can be said that this formulation Is wonderful for satisfying the needs of the worldwide market, safe to use, and easier to apply. This Study can be helpful for upcoming researchers in developing a herbal hair mask and its evaluation Which can be claimed for their efficacy with scientific data. 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. This study presents A number of plant drugs with proven efficacy in hair care preparations.

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