INTERNATIONAL JOURNAL OF PHARMACEUTICAL SCIENCES
[ISSN: 0975-4725; CODEN(USA): IJPS00]
Journal Homepage: https://www.ijpsjournal.com

OPEN ACCESS

Review Article

Review on Formulation and Evaluation of Polyherbal Antidandruff Hair Mask

Pooja Naik*, Dr. R. D. Ingole, Rahul Harkal, Rohit Marathe, Rushikesh Naske, Priti Zute, Aditya Tambve

DJPS College of Pharmacy, Pathri, Parbhani, Maharashtra, India, 431506

ARTICLE INFO

Published: 12 Jul. 2025
Keywords:
Hair mask, dandruff, antifungal
DOI:
10.5281/zenodo.15869556

ABSTRACT

By alleviating dandruff, an herbal anti-dandruff hair mask makes you eliminate dandruff, itchiness, greasiness, and flakiness and provides nutrients to hair and scalp. Dandruff is a stubborn hair concern that chemical-laden products often fail to resolve completely. These chemical damages the hair and causes split ends. The most sensitive part of the body are the hairs. Therefore, to maintain them, we came up with a hair mask solution. As a result of being conscious of their benefits for hair, the ingredients in the hair mask are included. Hair masks apply to strengthen and darken hair, as well as eliminate impurities and dandruff. Nourishes roots with vitamins and minerals for denser, fuller-looking hair.

INTRODUCTION

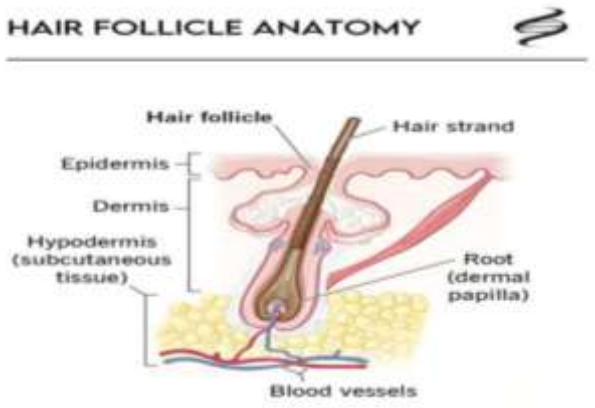
Dandruff is a common scalp disorder characterized by flaking, itching, and irritation, often caused by fungal overgrowth (*Malassezia* spp.), excessive sebum production, or dry skin. Dandruff represents one of the most prevalent scalp disorders globally, affecting nearly 50% of the adult population.[1] This multifactorial condition manifests clinically through visible flaking, persistent pruritus, and scalp irritation, primarily.[2] To overcome these limitations, herbal anti-dandruff hair masks offer a natural, sustainable alternative. These formulations leverage the antifungal, anti-inflammatory, and nourishing properties of medicinal plants to address dandruff at its root while promoting overall scalp and hair health. In recent years, there has been a growing shift toward natural, plant-based solutions that provide effective dandruff control without adverse effects.[3]

1.2 Structure of hair

***Corresponding Author:** Pooja Naik
Address: *DJPS College of Pharmacy, Pathri, Parbhani, Maharashtra, India, 431506*
Email : psnaik400@gmail.com

Relevant conflicts of interest/financial disclosures: The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

Human hair is a remarkable biological filament, typically 50–100 micrometers (µm) in diameter**,** that emerges from the skin. Despite its delicate appearance, hair is a complex structure designed for strength and resilience.[4] Human hair is a complex biological structure composed primarily of keratin, a tough fibrous protein that provides strength and elasticity. Each hair strand consists of three main layers: the cuticle, cortex, and medulla.[5] The cuticle, the outermost protective layer, is made of overlapping keratinized scales that shield the inner layers from damage and moisture loss. Beneath it lies the **cortex**, which forms the bulk of the hair and contains melanin (responsible for hair color) as well as keratin bundles that determine hair's strength, texture, and flexibility.[6] The innermost layer, the medulla, is a soft, spongy core present only in thicker hairs, though its exact function remains unclear. Hair grows from follicles embedded in the scalp, where living cells divide and push older cells upward, gradually hardening into the hair shaft we see. This unique multi-layered structure gives hair its durability, elasticity, and ability to withstand daily wear and environmental stress.[7]



1.3 Benefits of herbal hair mask [8,9]

- Relieves Itchy, Irritated Scalp
- Eliminates Dandruff-Causing Microbes
- Balances Oil Production
- Fortifies Hair Strands
- Deeply Hydrates Scalp
- Boosts Scalp Health
- Uses of Herbal Plants

2.1 Amla Powder

FIG. NO.1: ***Emblica officinalis***

Amla powder, derived from the Indian gooseberry (*Emblica officinalis*), is a powerhouse of nutrients and bioactive compounds, making it a staple in Ayurveda and modern herbal remedies. Rich in vitamin C (ascorbic acid), tannin**s** (emblicanin A and B), flavonoids, and polyphenols, it offers potent antioxidant, anti-inflammatory, and immunomodulatory benefits.[10] These constituents help neutralize free radicals, slow aging, and enhance immunity. Additionally, amla contains minerals like iron, calcium, and phosphorus, along with gallic acid and quercetin, which support digestion, liver function, and cardiovascular health. Its high fiber content aids in gut health, while its hypoglycemic properties help regulate blood sugar levels. Topically, amla powder strengthens hair by preventing breakage, promoting growth, and reducing dandruff, while its astringent and antimicrobial properties benefit skin health by reducing acne and brightening complexion. Whether consumed or applied, amla powder is a versatile natural remedy with wide-ranging therapeutic effects. [11]

2.2 Reetha:

FIG. NO.2: Reetha (*Sapindus mukorossi*)

Reetha (Sapindus mukorossi**)**,[12] also known as soapnut, is a natural hair care ingredient rich in bioactive compounds like saponins (10-11%), which act as a gentle, chemical-free cleanser by forming a lather that removes unclean and excess oil without stripping natural moisture. It also contains flavonoids, tannins, and phenolic compounds,[13] which exhibit antimicrobial and anti-inflammatory properties, helping to treat dandruff, scalp infections, and itchiness. The presence of natural oils and mucilage conditions hair, reducing frizz and enhancing shine. Additionally, Ritha's low pH helps maintain scalp health, strengthens hair roots, and prevents hair fall. Its mild exfoliating action unclogs hair follicles, promoting healthier growth while preventing premature graying. Regular use of Reetha as a hair wash or mask can result in softer, stronger, and naturally cleansed hair, making it a popular Ayurvedic alternative to synthetic shampoos. [14]

2.3 Shikakai (*Acacia concinna*)

FIG NO.3: Shikakai (*Acacia concinna*)

Shikakai (*Acacia concinna*) is a revered Ayurvedic herb packed with beneficial phytochemicals that promote hair health. Its key bioactive constituents include saponins, which act as a mild, natural cleanser by gently removing dirt and excess sebum without stripping the scalp's natural oils. Rich in flavonoids, tannins, and glycosides, Shikakai exhibits anti-inflammatory and antimicrobial properties, helping to combat dandruff, scalp irritation, and fungal infections. The presence of vitamin C, antioxidants, and essential fatty acids nourishes hair follicles, strengthens strands, and reduces breakage.[15] Additionally, its low pH helps maintain the scalp's natural balance, preventing dryness and frizz while enhancing hair's natural shine. Regular use of Shikakai as a hair wash or mask can promote softer, thicker, and healthier hair, making it a popular natural alternative to harsh chemical shampoos. Its conditioning properties also help detangle hair, reduce split ends, and support sustainable hair growth.[16]

2.4 Hibiscus (Rosa-*sinensis*)

FIG. NO. 4: Hibiscus (*rosa-sinensis*)

Hibiscus (*rosa-sinensis*) is a powerhouse of bioactive compounds that offer exceptional benefits for hair health. Rich in flavonoids, anthocyanins, and phenolic acids, it provides potent antioxidant and anti-inflammatory effects that protect hair follicles from oxidative stress and premature aging. The presence of mucilage acts as a natural conditioner, imparting smoothness and shine while reducing frizz and split ends. Hibiscus is also packed with vitamin C, amino acids, and alpha-hydroxy acids (AHAs),[17] which stimulate collagen production, strengthen hair roots, and promote faster hair growth. Its natural protease enzymes help cleanse the scalp by removing dead skin cells and excess sebum, preventing dandruff and scalp infections. Regular use of hibiscus in hair masks or rinses can result in thicker, longer,

and lustrous hair**,** making it a prized Ayurvedic remedy for maintaining healthy, vibrant hair naturally. [18]

2.5 Curry leaves

FIG. NO.5 : Curry leaves (*Murraya koenigii*)

Curry leaves (Murraya koenigii) powder is a treasure trove of bioactive compounds that offer remarkable benefits for hair health. Rich in antioxidants like beta-carotene and flavonoids, along with essential proteins, amino acids, and vitamins (A, B, C, and E), it nourishes hair follicles and promotes healthy growth [19]. The presence of alkaloids (like mahanimbine) and phenolic compounds helps combat scalp inflammation, dandruff, and premature graying. Its iron and folic acid content strengthens hair roots, reducing breakage and excessive shedding. Additionally, curry leaf powder contains essential oils and tannins, which improve scalp circulation, stimulate dormant follicles, and add natural shine to hair.[20] When used in hair masks or oils, it conditions the scalp, prevents thinning, and restores vitality to dull, damaged hair. Regular application can lead to thicker, stronger, and more resilient hair, making it a potent Ayurvedic remedy for maintaining luscious locks naturally.[21]

2.6 Bhringraj

FIG. NO. 6 : Bhringraj (*Eclipta prostrata*)

Bhringraj (*Eclipta prostrata*) is a revered Ayurvedic herb packed with bioactive compounds that offer exceptional benefits for hair health. Rich in wedelolactone, ecliptine, and flavonoids, it exhibits potent antioxidant, anti-inflammatory, and antimicrobial properties that combat scalp infections, dandruff, and hair follicle damage. The presence of nicotine, coumestans, and sterols stimulates blood circulation to the scalp, promoting hair growth and preventing premature graying. Bhringraj is also abundant in iron, magnesium, and vitamin E, which strengthen hair roots, reduce breakage, and improve hair texture.[22] Its natural oils and proteins deeply condition the scalp, preventing dryness, split ends, and excessive hair fall. Regular application of Bhringraj powder or oil can revitalize dormant follicles, enhance hair density, and restore shine, making it a cornerstone of traditional hair care for thicker, longer, and healthier hair**.** Its adaptogenic properties also help reduce stress-related hair loss, solidifying its status as a holistic remedy for hair rejuvenation.[23]

2.7 Jaborandi oil

FIG. NO 7: Jabrandi oil (*Pilocarpus microphyllus*)

Jaborandi oil, derived from the leaves of *Pilocarpus microphyllus* (a shrub native to Brazil), is rich in bioactive alkaloids, primarily pilocarpine, along with isopilocarpine,

pilocarpidine, and jaborine. These imidazole alkaloids are responsible for its pharmacological effects, including stimulating sweat glands and promoting hair follicle activity. The oil also contains essential oils, flavonoids, and tannins, which contribute to its antioxidant and anti-inflammatory properties. For hair care, Jaborandi oil is prized for its anti-hair **loss** and growth-stimulating benefits. It works **by** improving blood circulation to the scalp, which strengthens hair roots and reduces shedding. Additionally, its sebum-balancing properties help combat dandruff and dry scalp conditions. The oil is often used in hair tonics, serums**,** and anti-dandruff formulations to promote thicker, healthier hair. Unlike harsh chemical treatments, Jaborandi oil offers a natural, non-irritating alternative for those struggling with thinning hair or scalp disorders. However, due to its potent nature, it should be diluted with carrier oils (like coconut or jojoba oil) before topical application to avoid irritation.[24]

2.8 Fenugreek

FIG. NO. 8 : Fenugreek (*Trigonella foenum-graecum*)

Fenugreek (*Trigonella foenum-graecum*) seeds, when ground into powder, are a powerhouse of bioactive compounds beneficial for hair health. Rich in proteins (30%) and amino acids (lysine, L-tryptophan)**,** they strengthen hair keratin, reducing breakage and split ends. The powder also contains nicotinic acid (stimulates blood circulation)**,** lecithin (moisturizes and conditions), and flavonoids (antioxidants that combat oxidative stress). Additionally, fenugreek is packed with vitamins (A, C, K) and minerals (iron, zinc, selenium)**,** which nourish follicles and promote growth.[25] For hair care, fenugreek powder is renowned for its anti-hair fall, dandruff-fighting, and growth-enhancing properties. When mixed into masks or pastes, it **s**oothes scalp inflammation**,** reduces flakiness, and prevents premature graying. Its mucilage content acts as a natural emollient, adding shine and softness to dry, frizzy hair. Regular use can thicken hair strands**,** reduce split ends, and stimulate dormant follicles, making it a popular Ayurvedic remedy for hair loss.[26] It's often blended with yogurt**,** aloe vera**,** or coconut milk for deep conditioning. Unlike synthetic treatments, fenugreek powder is gentle, making it suitable for sensitive scalps.[27]

2.9 Tulsi

FIG NO.9 : Tulsi (*Ocimum sanctum*)

Tulsi (*Ocimum sanctum*), revered in Ayurveda, is a potent herb rich in bioactive compounds that benefit hair health. Its leaves contain essential oils (eugenol, ursolic acid, and carvacrol)**,** which exhibit antimicrobial, anti-inflammatory, and antioxidant properties. Tulsi also boasts flavonoids (orientin, vicenin)**,** tannins**,** and vitamins (A, C, and K)**,** which nourish the scalp and strengthen hair follicles.[28] For hair care, Tulsi is prized for its ability to combat scalp infections, reduce dandruff, and soothe irritation caused by fungal or bacterial imbalances. Its ursolic acid stimulates blood circulation, promoting hair growth and preventing premature

graying. Tulsi's astringent properties help regulate excess oil (sebum) production, making it ideal for oily scalps, while its moisturizing effects prevent dryness and breakage. Regular use of Tulsi-infused hair masks or rinses can reduce hair fall, add shine, and improve scalp health. It's often combined with coconut oil, aloe vera, or neem for enhanced benefits.[29]

2.10 Ginger

FIG NO. 10: Ginger (*Zingiber officinale*)

Ginger (*Zingiber officinale*) is a powerhouse of bioactive compounds that promote hair health. Its key constituents include gingerol (a potent antioxidant and anti-inflammatory agent), shogaols, zingiberene, and essential oils rich in vitamins (A, C, E) and minerals (magnesium, phosphorus, zinc). These compounds work synergistically to stimulate blood circulation in the scalp, ensuring better nutrient delivery to hair follicles.[30] For hair care, ginger is renowned for its ability to combat hair loss, strengthen roots, and prevent thinning**.** Its antimicrobial properties help treat scalp infections and dandruff, while its anti-inflammatory effects soothe irritation and reduce follicular damage. Ginger also inhibits 5-alpha-reductase, an enzyme linked to androgenetic alopecia (pattern baldness). [31] When applied topically (often blended with carrier oils like coconut or olive oil), it revitalizes dormant follicles, reduces breakage, and adds shine. Regular use can thicken hair, curb excessive shedding, and promote healthier growthmaking it a natural alternative to chemical treatments.[32]

3.1 MATERIAL AND METHODS: -

The whole collection of organic compounds used in this research i.e., Amla, Bhringraj, Shikakai, Curry leaves, Reetha, ginger were purchase from a trusted local market in dried, powdered form to ensure purity and potency. Each powder was carefully selected based on traditional Ayurvedic efficacy and modern scientific validation for hair health benefits.[32]

3.2 Method of Preparation: -

Amla, Bhringraj, Shikekai, Curry leaves, reetha are components are in dry form grinded to make fine powder

- **Weighing**: -All the required herbal powders for hair mask 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; -** The fine powder was run through sieve no. 80, to obtain the required amount of fine powder.
- **Collection and storage**; -Powder mixture was stored in appropriate plastic container and utilized for performing evaluation parameters.[33]

3.4 Evaluation Parameter [34]

The prepared herbal anti-dandruff hair mask was evaluated by following parameters.

A. Organoleptic evaluation

Organoleptic evaluation involves the use of sensory organs—such as the eyes and nose—to assess the formulation based on its macroscopic characteristics. This includes the examination of attributes such as colour, odour, texture, and overall appearance of the product.

B. Physiochemical Assessment

a) pH measurement: pH of a 1% aqueous solution of the formulation was determined using a properly calibrated digital pH meter under constant temperature conditions.

b) Determination of Moisture Content (Loss on Drying)

Approximately 1.5 grams of the powdered sample was accurately weighed and transferred into a pre-weighed shallow porcelain dish. The sample was dried in a hot air oven at a temperature between 100°C and 105°C until consistent weight was achieved (i.e., the difference between two successive weighing's was no more than 0.5 mg). After drying, the sample was cooled in a desiccator and reweighed. The decrease in weight was recorded as the moisture loss.

c) Determination of Ash Content

A quantity of 2–4 grams of the powdered, air-dried plant material was carefully weighed and placed into a previously ignited and tared crucible (made of either silica or platinum). The sample was evenly spread and subjected to gradual heating, raising the temperature to 500–600°C until a white ash appeared, indicating complete combustion of organic matter. The crucible was allowed to cool in a desiccator and then weighed. If a white ash was not achieved, the residue was moistened with approximately 2 ml of water or a saturated solution of ammonium nitrate, followed by drying over a water bath and hot plate. It was then reignited to a constant weight. The crucible was cooled again in a desiccator for 30 minutes and weighed promptly. The total ash value was expressed in milligrams per gram of air-dried sample.

C. Phytochemical Screening [35]

A series of qualitative tests were carried out to detect the presence of bioactive phytochemicals within the formulation. Each medicinal plant is known to possess specific chemical constituents that contribute to its therapeutic properties. These Phyto compounds exhibit a wide range of beneficial physiological effects

C. Phytochemical Analysis

a) Identification of Carbohydrates

Molisch's test: Take 2–3 ml of the aqueous extract and add a few drops of α-naphthol dissolved in alcohol. Carefully layer concentrated sulfuric acid along the side of the test tube. The formation of a purple or violet ring at the junction indicates the presence of carbohydrates.

Fehling's Reaction: Prepare an equal mixture of Fehling's solution A and B (1 ml each) and boil for a minute. Add an equal amount of the test solution, then heat in a water bath for 5–10 minutes. The gradual formation of a yellow to brick-red precipitate suggests the presence of reducing sugars.

b) Identification of Alkaloids

Hager's Reagent Test: To 2–3 ml of the filtrate, add Hager's reagent. A yellow precipitate implies the presence of alkaloid compounds

Mayer's Reagent Test: Mix a few drops of Mayer's reagent with 2–3 ml of the extract filtrate. A creamy or pale-white precipitate indicates alkaloid content.

c) Foam Formation Test (for Saponins): Vigorously shake the drug extract or its powdered form with water. The development of stable, persistent foam indicates the existence of saponins.

d) Identification of Volatile Oils: Approximately 2–4 grams of the hair mask formulation is treated with an alcoholic solution of Sudan III. A red coloration is produced if volatile oils are present.

e) Rheological Properties

a) Tapped Density: Tapped density refers to the denser packing achieved when a container filled with powdered material is subjected to mechanical tapping. After noting the initial volume, the container is tapped continuously for about a minute or until the volume stabilizes.
Formula:
Tapped Density = Weight of Powder / Tapped Volume (g/ml)

b) Bulk Density: Bulk density represents the ratio of the mass of a loose powder sample to the volume it occupies. A specific amount of dry powder is filled into a 50 ml graduated cylinder without compression. The cylinder is then dropped at 2-second intervals from a height of 1 inch onto a firm surface. The volume and mass are recorded to calculate the bulk density.
Formula:
Bulk Density = Weight of Powder / Bulk Volume (g/ml)

c) Angle of Repose: The angle of repose is described as the steepest angle relative to the horizontal plane at which a material can be piled without slumping. It provides insight into the powder's flow characteristics.

D. Rheological Assessment

a) Angle of Repose: The angle of repose is the steepest angle formed between the horizontal surface and the slope of a pile of powder, indicating its flow characteristics. To perform the test, a known quantity of dry powder is placed into a cylindrical tube open at both ends and set vertically on a flat surface. The powder is allowed to flow from the tube to form a conical heap. The height (h) and radius (r) of the pile are measured. The angle of repose (θ) is calculated using the following for

θ = tan-1 (h/r)

Where:

- **θ** = Angle of repose
- **h** = Height of the pile
- **r** = Radius of the pile's base

b) Hausner's Ratio: This parameter indicates the flowability of the powder. It is the ratio of tapped density to bulk density:

Hausner's Ratio = Tapped Density / Bulk Density

A Hausner's ratio greater than 1.25 suggests poor flow properties.

e) Carr's Compressibility Index: Carr's Index provides a measure of the compressibility of a powder and is calculated as:

Carr's Index Tapped Density - Bulk Density x 100

A lower Carr's Index value indicates better

E. Stability Testing [36]

The powdered formulation was subjected to storage under controlled environmental conditions—specifically at temperatures of 35°C and 40°C with varied humidity. The samples were observed periodically for changes in physical appearance, texture, and other characteristics to assess formulation stability over time.

F. Microbial Assay for Antifungal Activity [37]

To evaluate antifungal efficacy, **Candida albicans** was used in a **cup plate diffusion assay**. The culture was maintained on agar slants. After the medium in the Petri dish solidified, two wells of 6 mm diameter were created.

- One well was loaded with the test sample.
- The other was inoculated with the fungal strain.

The plates were incubated at **37°C for 24 hours**, and antifungal activity was assessed by measuring the **zone of inhibition** around the wells.

TABLE:-3.1

SR. NO	INGRIDENTS	M1
1	Amla	9gm
2	Reetha	11gm
3	Hibiscus	12gm
4	Curry leaves	7gm
5	Fenugreek Powder	7gm
6	Jaborandi Oil	6gm
7	Tulsi	10gm
8	Ginger	11gm
9	Bhringraj	10gm
10	Shikakai	12gm

4.0 RESULTS AND DISCUSSION

To establish the effectiveness and quality of the prepared herbal hair mask, various evaluation parameters were carried out.

4.1 Organoleptic Evaluation

The herbal hair mask underwent organoleptic assessment, with the findings presented in **Table 2**. The formulation exhibited a **greenish-brown color**, which is visually acceptable for herbal cosmetic products. It emitted a **distinctive, characteristic odor**, aligning with the expectations for natural cosmetic preparations. The **texture and overall appearance** of the formulation were also found to be suitable and met the desirable standards for cosmetic applications.

TABLE: - 3.2 Organoleptic Evaluations

SR.NO.	PARAMETER	OBSERAVATION
1	Colour	Greenish Brown
2	Odour	Characteristics
3	Texture	Fine
4	Appearance	Coarse Powder

TABLE NO. 3.4 : Organoleptic Evaluations

SR. NO	DRUG	COLOUR	ODOUR	TASTE	TEXTURE	APPEARANCE
1	Amla	Greenish Yellow	Pungent	Sour	Fibrous	Smooth
2	Reetha	Light Brown	Slight Nutty'	Bitter	Silk And Smooth	Rough
3	Bhringraj	Green	Pungent	Bitter	Smooth And Glossy	Rough
4	Hibiscus	Red , Pink	Floral Fresh	Tart	Smooth And Glossy	Smooth
5	Curry Leaves	Green	Burnt	Arromatic	Glossy	Dark Green
6	Fenugreek Powder	Yellow	Earthy Or Curry Like	Sweet Bitter	Finely Ground, Slightly Coarse	Rough
7	Jaborandi Oil	Colour Less	Pleasant	Test Less	Non-Sticky Volatile	Viscous Oil
8	Tulsi	Green	Aromatic	Mint	Slightly Hairy	Green Or Purple
9	Ginger	Yellow	PUNGENT	Spicy	Rough	Light Brown
10	Shikakai	Brown	Odour Less	Bitter	Rough And Glossy	Feathery Leaves

4.2 Physicochemical Evaluation

The prepared herbal hair mask was subjected to a series of physicochemical tests, and the results are summarized in **Table 3**. The **pH** of the formulation was found to be **6.5**, indicating that it falls within the ideal range for scalp and hair care, maintaining compatibility with the skin's natural pH. Both the **ash value** and **moisture content** were observed to be within acceptable limits, confirming the formulation's stability and quality.

Table: - 3.4 Physiochemical Evaluations

Sr. No.	Parameter	Obseravation
1	PH	6.5
2	LOD	1.36%w/w
3	Ash value	3.6%w/w

Phytochemical Evaluations

1. Fehling's test Presence of carbohydrate Positive
2. Hager's test Hager's test Positive
3. Mayer's test Presence of Alkaloid Positive
4. Volatile oil test Presence of Volatile oil Negative
5. Biuret test Presence of Proteins Negative

Table No- 3.5 Phytochemical evaluation

Sr. No	Test	Purpose For Detection	Result
1	Molisch's test	Presence carbohydrate	Positive
2	Fehling's test	Presence carbohydrate	Positive
3	Hager's test	Presence Alkaloid	Positive
4	Mayer's test	Presence Alkaloid	Positive
5	Volatile oil test	Presence Volatile oil	Negative
6	Biuret test	Presence Proteins	Negative
7	Foam test	Presence Saponin	Positive

4.4 RHEOLOGICAL EVALUATION

A series of qualitative tests were carried out to detect the presence of bioactive phytochemicals within the formulation. Each medicinal plant is known to possess specific chemical constituents that contribute to its therapeutic properties. These phytocompounds exhibit a wide range of beneficial physiological effects.

TABLE:-3.6 RHEOLOGICAL EVALUATION

SR. NO	Parameter	Observation
1	Tapped Density	0.5
2	Bulk Density	0.41
3	Angle of Repose	39.41
4	Hausner's ratio	1.21
5	Carr's index	18

4.5 STABILITYES STUDIES

The result of stability was showen in table no. 3.6 change in colour , odour , texture and appearance was observed.

Sr.no	Parameter	Result
1	Change in Colour	Nil
2	Change in odour	Nil
3	Change in texture	Nil
4	Change in appearance	Nil

4.6 Microbial assay

The antifungal activitys were evaluated by measuring the zone in inhibiting (in mm)

TABLE NO.3.7 MICROBIAL ASSAY

Sr.no	Fungus	Zone of inhibition (in mm)
1	Candida Albicans	26mm

CONCLUSION:

The use of Ayurvedic hair masks offers a promising natural alternative to synthetic hair care products, drawing on centuries-old traditions of holistic wellness. This review highlights the potential of key all herbal ingredients in promoting hair growth, improving scalp health, and preventing common hair issues like dandruff, hair fall, and premature graying. Scientific studies increasingly support the therapeutic efficacy of these herbs due to their antioxidant, anti-

inflammatory, and antimicrobial properties. Despite their rich potential, further standardization, formulation optimization, and clinical validation are essential to fully integrate Ayurvedic hair masks into mainstream cosmetic and dermatological applications. Future research should focus on pharmacological profiling, dosage standardization, and the development of stable, user-friendly formulations. In conclusion, Ayurvedic hair masks represent a sustainable, effective, and culturally rooted solution for natural hair care, aligning modern consumer demand with traditional wisdom.

REFERENCES

1. Gonçalves S, Gaivão I. Revitalizing the hair ends: Formulation and evaluation of the elderflower (Sambucus nigra) hair mask for enhanced hair health. Our Dermatology Online/Nasza Dermatologia Online. 2024 Jan 1;15(1).
2. Mishra P, Maury S. THE REVIEW ON HERBAL HAIR MASK FOR THE PREVENTION OF DANDRUFF.
3. Jadhav MA, Wakale MM, Telangi MG, Varpe MP, Lokhande MR. Formulation and Evaluation of Herbal Anti Dandruff Hair Mask.
4. Pauling L, Corey RB. The structure of hair, muscle, and related proteins. Proceedings of the National Academy of Sciences. 1951 May;37(5):261-71.
5. Hashimoto K. The structure of human hair. Clinics in dermatology. 1988 Oct 1;6(4):7-21.
6. Schlake T. Determination of hair structure and shape. InSeminars in cell & developmental biology 2007 Apr 1 (Vol. 18, No. 2, pp. 267-273). Academic Press.
7. Luo L, Li H, Rusinkiewicz S. Structure-aware hair capture. ACM Transactions on Graphics (TOG). 2013 Jul 21;32(4):1-2
8. Gonçalves S, Gaivão I. Revitalizing the hair ends: Formulation and evaluation of the elderflower (Sambucus nigra) hair mask for enhanced hair health. Our Dermatology Online/Nasza Dermatologia Online. 2024 Jan 1;15(1).
9. Siddiqui SB, Deshkar R, Nasir S. In vitro study of hair mask/hair conditioner containing goodness of natural origin ingredients to get maximum benefits. Asian journal of management sciences & education. 2022;11(1):94-102.
10. Dasaroju S, Gottumukkala KM. Current trends in the research of Emblica officinalis (Amla): A pharmacological perspective. Int J Pharm Sci Rev Res. 2014;24(2):150-9.
11. Hassan SM, Mughal SS, Aslam AS, Mushtaq MA, Munir MU, Pervez SU, Shabbir NA, Ayub AR, Farman MU. Emblica officinalis (Amla): A prospective review on distinctive properties and therapeutic applications of Amla. Biomed. Nurs. 2020;6:22-30.
12. Panda A, Kumar A, Munshi B, Mohapatra SS. The enhancement of dropwise and spray evaporative cooling by using extract of Reetha added water as a coolant. Thermochimica Acta. 2019 Oct 1;680:178379.
13. Gaertn M. Research Journal of Pharmaceutical, Biological and Chemical Sciences.
14. Raut YB, Bais SK, Badure S. A REVIEW: AN ANALYSIS AND FORMULATION OF THE HERBAL SHAMPOO. International Journal of Pharmacy and Herbal Technology. 2023;1(3):132-40.
15. Sang SH, Akowuah GA, Liew KB, Lee SK, Keng JW, Lee SK, Yon JA, Tan CS, Chew YL. Natural alternatives from your garden for hair care: Revisiting the benefits of tropical herbs. Heliyon. 2023 Nov 1;9(11).
16. Bhatt U, Rajan VK, Patani P. A Comprehensive Review On Hair Benefits Of

Onion And Shikakai. Eurasian Journal of Analytical Chemistry. 2024 Jan 1;19(1).
17. Kapoor M, Kaur G, Kaur N, Sharma C, Batra K, Singh D. The traditional uses, phytochemistry and pharmacology of Genus Hibiscus: a review. Eur. J. Med. Plants. 2021;32(4):1-37.
18. Al-Snafi AE. Chemical constituents, pharmacological effects and therapeutic importance of Hibiscus rosa-sinensis-A review. IOSR Journal of Pharmacy. 2018 Jul;8(7):101-19
19. Singh S, More PK, Mohan SM. Curry leaves (Murraya koenigii Linn. Sprengal)-a mircale plant. Indian Journal of Scientific Research. 2014;4(1):46-52.
20. Nigam L. A Review on Medicinal Benefits of Curry Leaves. Journal of Advancement in Pharmacognosy. 2023;3(1).
21. Parul S, Javed A, Neha B, Honey J, Anuj B. Curry leaves–a medicinal herb. Asian Journal of Pharmaceutical Research. 2012;2(2):51-3.
22. Tripathy S, Singh JP, Tripathi A, Srivastava S, Chaurasia VK, Kumar R, Tiwari S, Pandey S. A REVIEW ON THE PHARMACOLOGICAL, BIOLOGICAL, CHEMICAL AND THERAPEUTIC VALUE OF ECLIPTA PROSTRATE (BHRINGRAJ PLANT). Biochemical & Cellular Archives. 2024 Oct 1;24(2).
23. Adom MB, Taher M, Mutalabisin MF, Amri MS, Kudos MB, Sulaiman MW, Sengupta P, Susanti D. Chemical constituents and medical benefits of Plantago major. Biomedicine & pharmacotherapy. 2017 Dec 1;96:348-60.
24. Roia Jr FC. The use of plants in hair and scalp preparations. Economic Botany. 1966 Jan 1:17-30.
25. Bhanu MS, Krishna SH, Kumar KS, Sri SB, Bhanu SG, Sruthi YS. FORMULATION AND EVALUATION OF HERBAL HAIR MASK CONTAINING LINUM USITATISSIMUM.
26. Mane PK. Formulation and Evaluation of Peel-Off Gel Formulation Containing Fenugreek. Pharmaceutical Resonance. 2021;3(2):99-104.
27. Yevale YB, omprakash Jaju S, Khendke AD, Awaghad SK. REVITALIZING BEAUTY: A COMPREHENSIVE STUDY ON FENUGREEK-INFUSED HERBAL PEEL OFF MASK ENHANCED WITH CHARCOAL, ORANGE PEEL, AND COCONUT OIL. Chief Editor.
28. Shukla MK, Srivastava S, Srivastava H, Gupta N, Yadav R. Development and Assessment of An Anti-Dandruff Herbal Hair Mask.
29. Sumit K, Vivek S, Sujata S, Ashish B. Herbal cosmetics: Used for skin and hair. Inven. J. 2012 Oct 10;2012(4):1-7.
30. Hao Y, Lin X, Liu W, Jiang T, Zhang X, Yang S, Huang Y, Lai W, Fu C, Zhang Z. Development of nanofiber facial mask inspired by the multi-function of dried ginger (Zingiberis Rhizoma) essential oil. Scientific Reports. 2025 Jan 2;15(1):402.
31. Jadhav MA, Wakale MM, Telangi MG, Varpe MP, Lokhande MR. Formulation and Evaluation of Herbal Anti Dandruff Hair Mask.
32. Sumit K, Vivek S, Sujata S, Ashish B. Herbal cosmetics: Used for skin and hair. Inven. J. 2012 Oct 10;2012(4):1-7.
33. Jadhav MA, Wakale MM, Telangi MG, Varpe MP, Lokhande MR. Formulation and Evaluation of Herbal Anti Dandruff Hair Mask.
34. Sayyad TR, Chaudhari SS, Nikumbh PP, Bhurat MR. Evaluation, composition and comparative study of hair growing tonic. Pharm Resonance. 2023;6(1):12.

35. Fedorovska M, Polovko N, Leochko N. Development of mask-cream technology with herbal substances for the androgenic alopecia treatment. ScienceRise: Pharmaceutical Science. 2017(3):19-24.
36. Narayanamoorthy S, Brainy JV, Manirathinam T, Kalaiselvan S, Kureethara JV, Kang D. An adoptable multi-criteria decision-making analysis to select a best hair mask product-extended weighted aggregated sum product assessment method. International Journal of Computational Intelligence Systems. 2021 Dec;14:1-6.
37. Mishra P, Maury S. THE REVIEW ON HERBAL HAIR MASK FOR THE PREVENTION OF DANDRUFF.
38. Jadhav MA, Wakale MM, Telangi MG, Varpe MP, Lokhande MR. Formulation and Evaluation of Herbal Anti Dandruff Hair Mask.

HOW TO CITE: Pooja Naik, Dr. R. D. Ingole, Rahul Harkal, Rohit Marathe, Rushikesh Naske, Priti Zute, Aditya Tambve, Review on Formulation and Evaluation of Polyherbal Antidandruff Hair Mask, Int. J. of Pharm. Sci., 2025, Vol 3, Issue 7, 1660-1672. https://doi.org/10.5281/zenodo.15869556