

TOPIC: TO FORMULATE AND EVALUATE ANTI DANDRUFF HERBAL HAIR MASK

**Dr. Rahulkumar Damodhar Rahane*¹, Miss. Supriya Anil Chavhan*²,
Mr. Raj Sanjay Sutar*³, Miss. Pratibha Prakash Rathod*⁴,
Miss Sahyadri Bapusaheb Thete*⁵, Mr. Pankaj Nandu Kakade*⁶,
Miss Tejal Ravindra Rokade*⁷**

*^{1,2,3,4,5,6}Matoshri Miratai Aher College Of Pharmacy, Karjule Haryana

ABSTRACT

The most delicate area of the scalp is the hair. A significant and widespread issue in today's society is dandruff. In that situation, the skin on the scalp produces flakes, which itches. Chronic scalp condition that is severe because it affects a wide variety of scalp tissue. Fungal infections are caused by a variety of factors, including an oily scalp and poor hygiene, and they become more prevalent if hair is not cleaned for a week. Redness, flaking, and itching are signs of this chronic scalp condition, which can be treated naturally with herbal hair products. The use of natural herbs like Amla, Neem, and Shikakai is advised in the ancient Indian medical system Ayurveda.^[1]

Based on both traditional systems and scientific justification for modern use, Amla, Bhringaraj, Hibiscus, Shikakai, Ginger, and other herbs were chosen to formulate the anti-dandruff herbal hair mask. The development and assessment of several herbal anti-dandruff formulations is the focus of the formulation. The results of the evaluation method show that batch D had significantly less dandruff than batch C. Because it only contained natural, hair-friendly ingredients, the herbal powder had no chemical content. According to this study, all of the ideal characteristics are present in the composition of an anti-dandruff herbal hair mask. of a beneficial herbal hair mask and is found to be safe, more efficient, and effect

Keyword - Anti-dandruff, herbal, hair mask, promotes hair growth

I. INTRODUCTION

The definition of a hair, which is an outgrowth from a follicle on the skin, is "improved epithelial structure formed as a result of keratinization of Germinative cells." The chemical components Carbon, Nitrogen, Sulphur, and Oxygen are found in keratin, which is the substance that makes up hair. This cyclical mechanism includes hair shaft synthesis, elongation, and eventual loss. Human hair is made up of follicles that are in the Anagen, Catagen, Telogen, and Exogen stages.^{[9][1]} If hair is left unwashed for a week, fungal infections become more prevalent due to an oily scalp and poor hygiene. Redness, flaking, and itching are signs of this chronic scalp condition, which can be treated naturally with herbal hair products. If hair is left unwashed for a week, fungal infections become more prevalent due to an oily scalp and poor hygiene. Redness, flaking, and itching are signs of this chronic scalp condition, which can be treated naturally with herbal hair products.^{[9][1]}



Fig 1: Stages of hair growth

Natural medicines are now used more frequently than ever before because of their safety and minimized effects as compared to items with a chemical base. Healthy hair can be achieved with the use of hair care products devoid of dangerous chemicals. For keeping healthy hair, the ancient Indian medical school of Ayurveda advises using

natural herbs like Amla, Neem, and Shikakai.^[1] These plants are proven to boost hair follicles and nourish the scalp, resulting in thicker, more resilient hair. An herbal hair mask that fights dandruff helps you get rid of itchy, greasy, flaky skin on your scalp and gives you a healthy, nourished scalp.^[1] 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 antidandruff 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.^{[2][3][9]}

The main ingredients in the preparation of the herbal mask are Amla, Bhringraj, Hibiscus, Shikakai, Ginger, and other herbs have been chosen to create the herbal hair mask based on their traditional uses and their scientific support for modern applications. The current study report and formulation involves the creation of a multi-herbal hair mask formulation.

Aim

The aim of the current study is to create an anti-dandruff hair mask to reduce dirt and dandruff. Thus, it is a very good solution for people who seek more natural and gentle hair care product. Moreover, hair care product that are free from chemical can help to achieve a healthy look and shiny hair.

Objective

- Anti-dandruff herbal hair is a hair care product that absorbs deep into hair to provide hydration and nourishment from the roots to the tips.
- The present study showed that the main ingredients which have been selected for the formulation of herbal hair mask on the basis of conventional wisdom and scientific evidence is Amla, Neem, Shikakai, Reetha, Ginger, Bhringraj, Tulsi, and Rose water. Hair masks take care of hair.
- Hair masks take care of hair that provide a holistic hair care that addresses multiple hair concerns.
- Regular use of this herbal hair mask can result in stronger, healthier, and more shining waves.
- A hair mask is totally free from hazardous substances.

Need of ant dandruff herbal hair mask

- The Anti-dandruff herbal hair mask in which the ingredients used in the mask have natural anti-fungal and anti-inflammatory properties that help soothe and heal the scalp. Regular use of this mask can also improve overall hair health and promote hair growth.
- This makes it a great choice for those who want to address multiple hair concerns at once. Additionally, the use of natural ingredients ensures that the mask is gentle on the scalp and free from harsh chemicals.
- The composition of an anti-dandruff herbal hair pack was shown to be risk-free, more effective, and commercially viable. It also possesses all the positive traits of an ideal herbal hair mask.

II. INFORMATION ABOUT INGREDIENT

For keeping healthy hair, an old Indian medical system advises using natural herbs like amla, neem, and shikakai. Amla fruit, Neem leaf, Reetha fruit, Hibiscus flower, Ginger fruit, Bhringraj leaf, and Shikakai fruit are the major ingredients in the manufacture of herbal masks. These ingredients were chosen based on the standard system and scientific justification for modern applications. These plants are proven to boost hair follicles and nourish the scalp, resulting in thicker, more resilient hair.

2.1 Amla - Amla is a superfood that nourishes hair, follicles, and the scalp because it is loaded with vitamins and minerals. Moreover, it improves blood flow, which stops hair loss. Also, it gives the follicles oxygen, which strengthens the fibers.^[5]



Order	Malpighiales
Family	Phyllanthaceae
Species	P.emblica

2.2 Neem- Neem aids in scalp cleansing. It promotes healthy hair development and unclogs congested pores. The ability to regenerate is crucial for the treatment of dry scalp. It offers preservative and therapeutic features and can be applied to a range of hair-related issues. Use a neem leaf-based rinse to get rid of dandruff. Neem is the most frequently used component in hair care products.^[3]



Order	Sapindales
Family	Meliaceae
Genus	Azadirachta

2.3 Reetha- Reetha provides cooling effects and seems to be particularly beneficial for washing the skin. It preserves the scalp's hydration and stops the hair from drying out. The advantages of applying Reetha to the skin are outstanding. It makes the scalp softer and silkier. In addition, it is applied to the head to remove cell flakes.^[3]



Family	Sapindaceae
Genus	Sapindus
Order	Sapindales
Kingdom	Plantae

2.4 Hibiscus

The best component for hair is hibiscus, commonly known as "Gudal." It treats hair loss, hair growth, and regeneration. Alpha hydroxyl acids, amino acids, alpha hydroxyl acid, both A and C, and additionally nutrients that are advantageous and may all be found in hibiscus, reduces your risk of developing dandruff and maintains the health of your scalp.^[10]



Table 2.4

Family	Malvaceae
Kingdom	Plantae

2.5 Ginger

Ginger is a fantastic hair conditioner that leaves your hair feeling smooth, lustrous, and manageable. It is also rich in minerals and essential oils. decreases dryness, flaky scalp, and irritability. It naturally possesses antibacterial and anti-inflammatory qualities. characteristics that support maintaining clean, healthy scalp.^[10]



Fig 2.5 Powder of Ginger Captured by author

Family	Zingiberaceae
Species	Z. officinale
Genus	Zingiber
Kingdom	Plantae

2.6 Bhringraj

The herb Bhringaraj encourages hair growth. a common Ayurvedic ingredient that promotes hair growth. by promoting and initiating hair growth, which is probably lost as a result of dandruff. One advantage of it is increased blood flow to the scalp. In addition, it avoids dandruff and scalp inflammation issues that have no effect on hair growth.^[4]



Family	Asteraceae
Kingdom	Plantae
Order	Asterales
Scientific name	Eclipta prostrata

2.7 Tulsi

Tulsi, also referred to as holy basil, it enhances blood circulation, lessens itching and dryness, strengthens hair follicles, and creates healthy roots while also assisting in maintaining moisture in the scalp. Additionally, it stimulates blood flow, calms the scalp, lessens itching and dandruff, and promotes hair growth.^[10]



Table 2.7

Family	Lamiaceae
Kingdom	Plantae

2.8 Shikakai

Shikakai has a special capacity to wash the scalp without irritating it, making it effective as an anti-dandruff remedy. It is very beneficial for treating persistent dandruff caused by an excess of scalp oil. It benefits by taking away excess oil from the scalp. Decrease dandruff when used regularly. One of the most effective Ayurveda medicines for hair-related issues, including hair fall, is Shikakai. Shikakai aids in cleaning the scalp of debris and surplus oil and encourages hair development.^[6]



Table 2.8

Common Name	Shikakai, Soap-Pod
Family	Fabaceae

2.9 Rose water

Water and rose petals are combined to create rose water. Due to its sweet aroma, it is used as a perfume, but it also has culinary and medical benefits. The usage of rose water has a long history in medicine dates back to the 7th century, and was practiced in several Middle Eastern countries, including Iran. There is proof that Native American tribes used it to treat illnesses as well.



III. MATERIAL & METHOD OF PREPARATION

3.1 Material

For hair masks with hair care properties, various herbal parts are choosing. All herbs are taken in powder form often have the ability to enhance the quality of the scalp and shield the skin from harm. The powdered forms of Amla fruit, Neem leaf, Reetha fruit, Hibiscus flower, Ginger fruit, Bhringraj leaf, Shikakai fruit are collected from natural origin. The purpose of the ingredients used as hair care product gives nutrition to the scalp. In ancient script it recommends that the use of natural herbs like Amla, Neem, and Shikakai for maintaining healthy hair. These herbs are known to nourish the scalp and strengthen hair follicles, leading to thicker and provide strong hair. Additionally, these herbs have antimicrobial properties that can help to prevent scalp infections and dandruff, promoting a healthier scalp and hair growth. It is important to note that natural remedies may take longer to show results compared to chemical-based products but they are generally safer and more sustainable in the long term. ^{[2][3][10]}

3.2 Method of preparation

Weight accurate quantity of each and every powders of Amla, Neem, Reetha, Hibiscus, Ginger, Bhringraj, Tulsi and Shikakai. Formulation of Anti dandruff herbal hair mask was done as per formula given in (Table no.3.2). All the component was homogeneously mixed. Consider for formulation take 2 gm of Shikakai powder in 50 ml of water. Then Boil for 15 min, then filter it with the help of filter paper. After that add filtrate in previously prepared homogeneous mixture of powders like (Amla, Neem, Reetha, Hibiscus, Ginger, Bhringraj, Tulsi and Shikakai) thoroughly with continuous stirring. For improvement of aroma in the formulation, sufficient quantity of rose water was added and Keep aside for 5 minutes. ^{[1][2][3]}

Formulation table

Table 3.2: COMPOSTION OF ANTI DANDRUFF HERBAL HAIR MASK

Sr.no	Ingredient	Batch (A)	Batch(B)	Batch (C)	Batch (D)
1	Amla	1 gm	3 gm	2 gm	3 gm
2	Neem	2 gm	5 gm	3 gm	4 gm
3	Reetha	1 gm	3 gm	4 gm	5gm
4	Hibiscus	2 gm	1 gm	2 gm	2gm
5	Ginger	2 gm	1 gm	3 gm	1gm
6	Bhringraj	3 gm	2 gm	3 gm	4gm
7	Tulsi	1 gm	1 gm	2 gm	2gm
8	Shikakai	-	2 gm	2 gm	2gm
9	Rose water	QS	QS	QS	QS
10	H2O	QS	QS	QS	QS

IV. EVALUATION PARAMETER

4.1 Angle of repose

An easy method for figuring out how well powder will flow is to use the slope of equilibrium Experimentally, it can be found by letting fine particle freely flow through a funnel and land on a surface.^{[2][1]}

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

Sr. No.	Method	Height of the heap (h in cm)	Radius of the heap (r in cm)	TAN $\theta = (H/R)$	Average $\tan\theta =$	$\theta = \tan^{-1}(h/r)$	Flow properties
1.	Funnel method	3.5 cm	5.2cm 4.9cm	0.6730	0.6821	33°5'	Good flow property
		3.3cm	5.0cm	0.6734			
		3.5 cm		0.7			

4.1.2 Bulk density: -

The powder content in a cylinder per gram of weight after 50 mechanical taps is referred to as bulk density. The bulk density will be determined using W/V 50 g/ml.^{[1][2]}

Here,

W=weight of container

V= container volume.

formula: $D = M / V$

Sr. No.	Bulk volume in (ml)	Mass of powder (gm)	Bulk density (gm/ml)	Average bulk density (gm/ml)
1.herbal powder	74	20	0.270g/cm ³	0.2804g/cm ³
	72	20	0.277g/cm ³	
	68	20	0.294g/cm ³	

4.1.3 Tapped density: The bulk ratio of a particle after it has been tapped for a set specific time is referred to as the powder's "tapped density." Tapped Density (g/ml) = M/V_f ^{[1][2]}

Sr. No.	Tapped volume (ml)	Mass of powder (gm)	Tapped density(gm/ml)	Average tapped density (gm/cm ³)
1.Herbal powder	37	20	0.54 g/cm ³ 0.57	0.56 g/cm ³
	35	20	g/cm ³	
	34	20	0.58 g/cm ³	

V. RESULT & DISCUSSION

5.1 Detection of carbohydrate

5.1.1 Molisch's test: - Take two to three sample extracts, combine them with a couple drops of an alcohol-alpha-naphthol solution, stir vigorously, and then implement a solution of concentrated H₂SO₄ from the test tube's sides. The presence of the carbohydrate is indicated by the formation of a violet ring at the junction of two liquids.



Fig no 5.5.1
Molisch's test

5.1.2 Fehling's Test-

Blend the test sample with the Fehling A and B solutions, then boil it for one minute. Add the test solution in an equal amount. Heat in a pot of boiling water for 5–10 minutes. Precipitate that is first yellow and then brick red is seen. It means that there are carbohydrates.



5.2 Detection of alkaloids

5.2.1 Hager's Test-

Add Hager's reagent to 2–3 ml of filtrate in a test tube as the test sample. When the mixture was thoroughly shaken, yellow precipitate was seen to form, indicating the presence of alkaloid.



5.2.2. Mayer's Test-

Add a couple drops of Mayer's reagent to 2-3 ml of filtrate in a test tube as the test sample. It produces the creamy precipitate and shows that the sample contains alkaloids.



5.3 Detection of protein

5.3.1 Foam test

Take the sample in test tube and shake the sample vigorously with water. Persistent stable foam observed. It shows that the saponin is present.



Fig no 5.3.1
Foam test

Sr.no	Test	Purpose for detection	Result
1	Molisch's test	Present of carbohydrate	Positive
2	Fehling test	Present of carbohydrate	Positive
3	Mayer's test	Present of alkaloid	Positive
4	Hager's test	Present of alkaloid	Positive
5	Foams test	Present of saponin	Positive

Discussion

Before using the herbal powder ingredient to perform evaluation parameters for the best result, it was collected and stored in a suitable plastic container. Batch D, which we compared to four other batches, demonstrated the best anti-dandruff performance. According to the evaluation's findings, batch D has significantly more dandruff than the other batches. This led to the conclusion that batch D's herbal powder ingredient, which is used in anti-dandruff formulations, exhibits the best results.

1. Batch A

The present study concludes that the preparation of anti-dandruff herbal mask the quantity of Reetha used in the formulation table may need to be adjusted to achieve optimal foaming ability without compromising the anti-dandruff properties of the hair mask. Further result show that the foaming ability was not satisfied. further studies could investigate alternative ingredients or formulations to improve foaming ability in batch B.

2. Batch B

According to the previous batch A. we sort out the foaming ability via increasing in quantity of Reetha. In batch B a new ingredient, Shikakai was added in formulation before proceeding with large-scale production. After that we noticed that small crystal was appeared in the formulation, so this batch was not satisfied.

3. Batch C

It can be concluded that the addition of Shikakai did not produce the optimal result in this particular formulation in batch B. In batch C, it concluded that the filtration method was successful to removing the crystals formed due to the addition of Shikakai in batch B. Further investigation may be needed to determine the optimal amount of Shikakai to be added in the formulation for batch preparation.

The results of the evaluation parameter, according to the current study, indicate that batch D had a significantly lower level of dandruff. Based on the results of this investigation, it was determined that the formulation of an herbal hair mask has all the desirable qualities of the ideal herbal hair mask, is safe, more effective, and is commercially viable.

VI. SUMMARY

Over the past few years, there has been a noticeable growth in the use of herbal products by consumers. according to a study of global hair care market trends. The hair is affected both directly and indirectly by factors like UV radiation and the use of harsh chemicals. The current study was conducted to develop an herbal anti-dandruff hair mask that will shine and encourage hair growth in order to solve this issue. We come to the conclusion that the formulation of the herbal hair mask lessens dandruff without irritating the scalp or having any other negative effects.

VII. CONCLUSION

The present studies conclude that the use of herbal plant products with proven efficacy, such as in the preparation of hair masks. This investigation was carried out on the basis of the traditional and present-day knowledge that was used to formulate the anti-dandruff herbal hair mask. Frequent use of this mask results in healthy, dandruff-free hair.

VIII. REFERENCES

- [1] <https://ijcrt.org/papers/IJCRT22A6058.pdf>
- [2] <https://www.researchgate.net/publication/361809533> Formulation and Evaluation of Herbal Anti Dandruff Hair Mask
- [3] <https://www.researchgate.net/publication/361809533> Formulation and Evaluation of Herbal Anti Dandruff Hair Mask
- [4] Abhishek Singh, Abhishek Saxena, Formulation and Evaluation of Herbal Anti-Dandruff Shampoo from Bhringraj Leaves, Pharmacy Practice and Research Volume I Issue I, CR Journals,2020 pp.5-11
- [5] Dasaroju S, Gottumukkala KM. Current trends in the research of *Embllica officinale* (Amla): A pharmacological perspective. *Int J Pharm Sci Rev Res* 2014; 24:150-9.
- [6] Khanpara, K., & Harisha, C. R. (2015). a Detailed Investigation on Shikakai (*Acacia Concinna* Linn.) – Fruit a Detailed Investigation on Shikakai (*Acacia*. *Journal of Current Pharmaceutical Research*, 9(1), 6–10.
- [7] Akash Jaybhaye, Rohit Panchal, et.al, Formulation of Herbal Hair Mask, 2020 IJCRT, Volume 8, Issue 9 September 2020, pp.2480-2481
- [8] Kokate C.K., „Practical phramacognosy”, Vallabh Prakashan, New Delhi, Fourth edition, 1994; 123.
- [9] Kokate C.K., Purohit A.P. and Gokhale S.B. “Pharmacognosy”, Nirali Prakashan, Pune, Sixteenth edition, 2001; 242-253
- [10] Wallis T.E. “Text book of Pharmacognosy” CBS Publishers & Distributors, 5th editions, 82=89.