

Formulation & Evaluation of Herbal Antidandruff Hair Mask

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ABSTRACT

During the latter part of the 20th century, herbalism has become mainstream worldwide. This is due in part to the recognition of the value of traditional and indigenous pharmacopeia's, the incorporation of some derived from these sources into pharmaceuticals, the need to make health care affordable for all, and the perception that natural remedies are somehow safer and more efficacious than remedies that are pharmaceutically derived. The herbal cosmetics are known as the preparation containing a variety of botanical sources which influence the functions of the skin and provide nutrients necessary for healthy skin or hair. Hair cosmetics are used to increase the patient's adhesion to alopecia & scalp treatment. Recently herbal cosmetics became popular among people. The herbs used in the preparation of herbal hair cosmetics are used as like antioxidant, anti-inflammatory, antiseptic and antimicrobial. Herbal cosmetics have efficacy and intrinsic acceptability due to regular use in daily life and avoid the adverse side effects which are commonly seen in synthetic products. Herbal anti dandruff hair mask helps you smoothen the irritating, oily & flaky scalp by controlling dandruff thus giving you itch free healthy scalp & nourished hairs. The dandruff is major problem of hair, which cannot be fully cured with the aid of chemical. This chemicals causes split ends & weakness the hair. The ingredient in the hair mask are added by knowing their benefits to hairs. The purpose of using hair mask to remove dirt & dandruff, promotes hair growth, luster, strengthens & darkness the hairs. The formulation of hair mask is completely free from chemicals. It only contains the natural ingredients which does not harm our hairs.

KEYWORDS : Hair mask, Hair, Anti-Dandruff, Herbal

INTRODUCTION :

1. Hairs are the delicate part of the body. So accordingly take care of them we made the formulation of the hair mask. Are add by knowing their benefits to hairs.
2. The purpose of using hair mask is to remove dirt that is built up in hairs. Coconut oil is also part of hair mask which is used to apply the mask on hairs.
3. The hair mask that made is completely free from chemicals. It only contains the natural ingredients which does not harm your hairs.
4. Hair is considered as the beauty in almost every culture. Hair mask can help to moisturize our hairs. They especially beneficial for dry or damaged hair.
5. Hair development is controlled by a complex & dynamic mechanisms that is still unknown hair shaft synthesis, elongation & eventually loss are all parts of this cyclical mechanism.
6. Human hair consist of follicles in the anagen, catagen & telogen stages. In the anagen phase, the hair follicle actively cytochrome & grows hair shaft quickly.



7. Hair is a vital element of the body & serves as a health indicator. This product is critical for those whose hair is extremely thin or whose hair is damaged.

8. If our hair is damaged, if that's the case, our personality will decrease. There are many different types of hair masks on the market, but they all contain the same ingredients. Chemicals are also harmful to our hair. As a result, we have created a chemical-free product.

9. Benefits of herbal Anti-Dandruff Hair Mask-

- a. Stimulate hair growth
- b. Cleansing
- c. Remove dandruff
- d. Reduce hair fall



❖ ABOUT SCALP AND HAIRS :

Covering the surface of our head, the scalp, extends from the top of your forehead across to the epicranial aponeurosis of the head. Laterally, it reaches down to the external auditory meatus and zygomatic arch (cheekbone of the skull). The scalp consists of 5 distinct layers:

- Skin
- Connective tissue
- Epicranial aponeurosis
- Loose connective tissue

- Pericranium (periosteum)

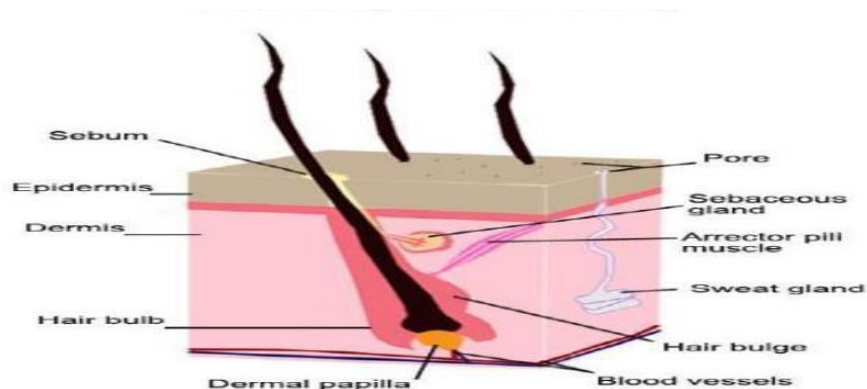


Fig : Anatomy of Hair

The scalp is obviously hairy and has many sebaceous glands (oil glands) scattered across it. This density at which these glands are found means that the scalp can commonly be affected by sebaceous cysts. Scalp hairs protrude from structures known as hair follicles, which are situated in the dermis of the scalp. The hair follicle is comprised of layers of cells that work together to support and form the hair shaft.

Scalp histology

Skin: The epidermis of the scalp contains multiple layers. These include the: stratum corneum stratum spinosum stratum basal

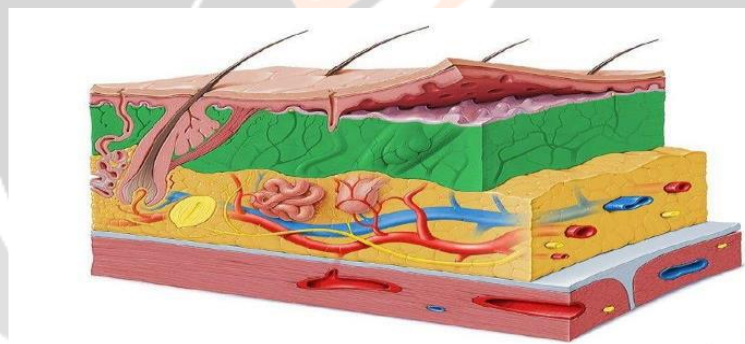


Fig : Scalp Histology

Beneath the epidermis the dermis is found. This is the portion of skin that contains structures such as the hair follicles, sweat glands, and dermal papillae. The dermal papillae is stromal and comprised of connective tissue. There is also a thicker layer of connective tissue beneath known as the reticular layer. This extends to the subcutaneous layer (hypodermis), which is positioned above the fascia. Within the subcutaneous layer, the basal portion of sweat glands can be found. There are many hair follicles in the skin of the scalp. They are densely packed together and often oriented at an angle from the scalp.

❖ Ingredients used in Herbal Hair Mask :

1. Amla
2. Hibiscus
3. Curry leaves
4. Methi
5. Shikakai

6. Reetha
7. Coconut oil

1. AMLA :



Fig : Amla

- Amla known as a source of vitamin C.
 - It is rich essential ingredient in hair tonic to promote hair growth & improve hair pigmentation.
 - Applying amla oil to the roots of hair improves hair growth & colour.
- ☐ Advantages :
1. Improves colour & radiance.
 2. It strengthens & nourishes the roots.
 3. Reduce baldness & hair loss.

1. HIBISCUS :



Fig : Hibiscus

- Hibiscus contains amino acids, vit. A & vit. C, alpha hydroxy acids & other nutrients that are very beneficial for hair & scalp.
 - Keeps your scalp healthy & minimizes the risk of dandruff.
- ☐ Advantages :
1. Stimulates hair growth.
 2. Protects from damage.
 3. Premature greying of hair.
 4. Control scalp itchiness.

2. CURRY LEAVES :



Fig : Curry leaves

- Curry leaves are very effective & maintain the health of our hairs.
- Curry leaves are beneficial to remove the dullness of our hairs.
- Curry leaves are full of health & beauty benefits & they can do wonders for our hairs.
- ❑ Advantages :
 1. Reduce hairfall
 2. Remove clogged hair follicles.
 3. Scalp restoration.
 4. Treat damage hair.

3. Methi :



Fig : Methi

- Methi is the hindi word & it's english name is fenugreek.
- This methi seeds are soaked for 30 minutes & then after it use.
- Methi seeds are considered to the one of the most effective remedies to treat hair fall issue.
- ❑ Advantages :
 1. Strength hair from root.
 2. Treat follicular roots.
 3. Fight scalp problem.

4. Shikakai ;



Fig : Shikakai

- It is especially useful in combating chronic dandruff caused by excess oil on the scalp.
 - It removes excess oil from the scalp & helps reduce dandruff during normal use.
 - Shikakai is one of the most useful ayurvedic herbs that is used for hair related problem especially hairfall.
- ☐ Advantages :
1. Anti dandruff agent
 2. Prevents dryness

5. Reetha :



Fig : Reetha

- Reetha shows cooling effects & acts like a very good thing cleansing of the skin.
 - It prevents the scalp from drying out & keep the skin soft.
 - It may clean the oily secretions in the skin.
- ☐ Advantages :
1. Control dandruff & itchy scalp.
 2. Mildly antiseptic & has detoxifying effects.
 3. Nourishes dry & rough hair.

6. Coconut oil :



Fig : Coconut oil

- There is a lot of medical research on the health benefits of coconut oil on your body, skin, & hair.
 - Some people apply coconut oil to their hair & scalp because they believe it helps hair to grow faster. We'll check if this really works.
 - Fatty coconut oil is made from raw or dried coconut. It looks like solid, white butter at room temperature & melts when hot.
- ❑ Advantages :
1. Coconut enhances weight loss.
 2. Keeps you hydrated.
 3. Improves skin health.

❖ MATERIAL & METHODS :

Material :

All the natural material used i.e. Amla, methi, curry leaves, hibiscus, coconut oil, Shikakai & Reetha.

METHODS :

1. **Preparation of herbal plant** : All the herbal ingredients are in dry form & grinded to make fine powder.
2. **Weighing** : All the required herbal powders for hair mask preparation were accurately weighed individually by using digital balance.
3. **Mixing** : All these fine ingredients were mixed thoroughly by mixer to form a homogenous fine powder.
4. **Sieving** ; This fine powder was passed through sieve no.80, to get the sufficient quantity of the fine powder.
5. **Collection & storage** : The powder mixture was collected & store in suitable plastic container & used for doing evaluation parameters.

| Sr.no | Name of Ingredients | Batch A | Batch B | Batch C | Batch D |
|-------|---------------------|---------|---------|---------|---------|
| 1. | Amla | 7 gm | 4 gm | 5 gm | 6 gm |
| 2. | Methi | 5 gm | 6 gm | 3 gm | 4 gm |
| 3. | Curry leaves | 4 gm | 2 gm | 2 gm | 3 gm |
| 4. | Hibiscus | 4 gm | 5 gm | 3 gm | 2 gm |
| 5. | Shikakai | 2 gm | 3 gm | 5 gm | 3 gm |
| 6. | Reetha | 1gm | 2 gm | 3 gm | 2 gm |
| 7. | Coconut oil | 2 ml | 3 ml | 4 ml | 5 ml |

Table1 : Formulation of Anti dandruff hair mask

❖ EVALUATION PARAMETERS :

➤ Organoleptic Evaluation –

By utilizing sensory organ like eyes or nose, the examination of The formulation is preferred under this evaluation,& it includes Macroscopic characteristics of the drug or product, such as Colour, odour, texture & appearance

➤ Physicochemical Evaluation –

- a. pH - pH of 1% aqueous solution of the formulation was measured by using a calibrated digital pH meter at constant.
- b. Washability
- c. Solubility

➤ Phytochemical Evaluation :

a. Detection of carbohydrates :

1. Molisch's Test –

To 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 liquids.

2. Fehling's Test –

Mix 1ml fehling A & 1ml fehling B solutions boil for 1 min . 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 filtrate with hager's reagent gives yellow ppt.

2. Mayer's Test – 2-3ml filtrate with few drops mayer's reagent gives creamy ppt.

c. Detection of Volatile oil :

2 to 4 gm of hair mask on treatment with alcoholic solution of sudan 3 develops red color in the presence of volatile oil.

d. Detection of proteins :

1. Biuret test - To 3 ml T.S. add 4% NaOH & few drops of 1% CuSO₄ solution. Violet or pink color appears.

2. Foam test – Shake the drug extract or dry powder vigorously with water. Persistent stable form observed.

➤ Rheological Evaluation :

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 1 min & volume or mass readings are taken until little further volume or mass change was observed. It was expressed in grams per milliliter.

$$\text{Tapped Density} = \text{Mass} / \text{Tapped volume}$$

b. Bulk Density :

Bulk density is the ratio between the given mass of a powder & its bulk volume. Required amount of the powder is dried & filled in a 50 ml measuring cylinder upto 50 ml mark. Then the cylinder is dropped onto a hard wood surface from a height of 1 inch second 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 cylindrical tube open at both ends is placed on a horizontal surface. Then the funnel should be raised to form a heap. The height & radius of the heap is noted & recorded for the above method, the angle of repose can be calculated by using the formula.

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

where, θ = angle of repose

h = height of the heap

R = radius of the radius

d. Hausner's ratio :

Hausner's ratio = Tapped density / Bulk density

e. Carr's Index :

Carr's index = tapped density – bulk density \times 100 / Tapped density

➤ **Patch Test :**

This usually involves dabbing a small amount of the aqueous solutions of hair dye behind the ear on inner elbow in an area of 1 sq.cm & leaving it to dry. Signs of irritation or feeling of non-wellness is noted, if any. Irritancy, redness & swelling were checked & noticed for regular intervals up to 24 hours if any. The results of tests for the signs of irritation are displayed in table.

➤ **Stability Testing –**

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

❖ **Result & Discussion :**

1. Organoleptic Evaluation -

| Sr. no | Parameters | Observations |
|--------|------------|----------------|
| 1. | Colour | Olive Green |
| 2. | Odour | Characteristic |
| 3. | Texture | Fine |
| 4. | Appearance | Coarse powder |

Table No : 2

2. Physicochemical Evaluation -

| Sr. No | Parameters | Observations |
|--------|-------------|-----------------|
| 1. | pH | 6.1 |
| 2. | Washability | Easily washable |

| | | |
|----|------------|------------|
| 3. | Solubility | No soluble |
|----|------------|------------|

Table No : 3

3. Phytochemical Evaluation –

| Sr. No | Test | Purpose of Detection | Result |
|--------|-------------------|---------------------------|----------|
| 1. | Molisch's Test | Presence of carbohydrates | Negative |
| 2. | Fehling's Test | Presence of carbohydrates | Negative |
| 3. | Hager'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 | Positive |

Table No : 4

4. Rheological Evaluation –

| Sr. No | Parameters | Observations |
|--------|-----------------|--------------|
| 1. | Tapped Density | 0.65 |
| 2. | Bulk Density | 0.5 |
| 3. | Angle of Repose | 38.21 |
| 4. | Hausner's Ratio | 1.3 |
| 5. | Carr's Index | 23.07 |

Table No : 5

5. Patch Test –

| Sr. No | Parameters | Observations |
|--------|------------|--------------|
| 1. | Swelling | Negative |
| 2. | Redness | Negative |
| 3. | Irritation | Negative |

Table No : 6

6. Stability studies –

| Sr. No | Parameters | Observations |
|--------|----------------------|--------------|
| 1. | Change in colour | No change |
| 2. | Change in odour | No change |
| 3. | Change in texture | No change |
| 4. | Change in appearance | No change |

Table No : 7

❖ Conclusion :

This study presents a number of plant drugs with proven efficacy in hair care preparation. A herbal hair mask treats dandruff from the hair in very easy manner. Herbal based cosmetics are popular for their non-toxic nature. This hair mask helps to nourishes the skin of the scalp . Oily scalp & poor hygiene leads to dandruff in their hair. If this mask used regularly it leads to healthy & dandruff free hair. Nowadays natural remedies are in more amount in all over world, because of their safe & less side effects compared to chemical based products. Herbal formulations can be prepared at home with the use of available ingredients . It is an try to prepare the herbal anti dandruff hair mask with the rich qualities of plants which are available easily & use for hair care formulations. Different parameters like Organoleptic evaluation, pH, Loss on drying, Ash content, stability studies is use for evaluation & which shows the significant result. The study of Amla & Shikakai shows the antidandruff activity. This study shows that the prepared formulation of herbal antidandruff hair mask is safe & use as the cosmeceutical.

❖ References :

- 1.Kokate C.K, "Practical pharmacognosy", vallabh prakashan, New Delhi, fourth edition, 123.(1994)
- 2.Kokate C.R, Purohit A.P & Gokhale S.B. "Pharmacognosy", Nirali prakashan, Pune, Sixteenth edition, 242-253.(2001)
- 3.More H.N & Hazare A.A (2007), "Practical Physical Pharmacy", 1st edition 114-119.
- 4.Khandelwal K.R (2008), "Practical Pharmacognosy Techniques & Experiments", Nirali Prakashan, 19th edition, 102-106.
5. Michel A., Naveen S., Karthika S., Sentila R., Mahenthiran R. The effectiveness of herbal & chemical agents in the treatment of dandruff in vitro. J Microbiol Biotech Res, vol. 2, no. 2, 2012, pp. 916-21.
6. Evans W.C (1997), "Pharmacognosy", 16th edition, Harcourt Brace & Company, New York 14 Ltd, 128.
7. Martin, Alfred (1993), "Physical pharmacy", 4th edition, London: Lea & Febigen Philadelphia431-432.
8. "The Pharmacopoeia of India", New Delhi,947 (1996).
9. Evans W.C (1997), "Pharmacognosy", 16th edition.
10. Manikar AR, Jolly CI.Evaluation of commercial shampoos. Int J Cosmet Sci 2000;22:385-91.
- 11.Firenzuoli F, Gori L, Crupi A, Neri D. Recenti prog. Med, vol.95, no.8, pp.345-351,2004.
- 12.AD Vaidya, TP Devasagayam, T Devasagayam An summary of current state of herbal Medications in India 1-11 in J Clin Biochem Nutr, 2007.
- 13.M. Narshana & P. Ravikumar, An overview of dandruff & novel formulation as a treatment strategy. IJPSR (2018),vol.9, issue 2.
- 14.Ashwini S. Pundkar, Prachi M. Murkute, Snehal wani, Mohini Tathe, A review on herbal therapy used in hair loss, Pharmaceutical resonance 2020, vol.3, Issue 1.
- 15.Wallis T.E. "Textbook of pharmacognosy", CBS publishers & Distributers, 5th edition, 82-89.
16. Khushboo PS, Jadhav VM, Kadam VJ, Sathe NS. Psoralea corylifolia Linn.-"Kushtanashini". Pharmacognosy Rev 2010;4:69-76.
17. Srivasuki KP. Nutritional and health care benefits of amla. J Pharm 2012;3:147-51.
18. Roy RK, Thakur M, Dixit VK. Hair growth promoting activity of Eclipta alba in male albino rats. Arch Dermatol Res 2008;300:357-64.
19. Tarun J, Susan J, Suria J, Susan VJ, Criton S. Evaluation of pH of bathing soaps and shampoos for skin and hair care. Indian J Dermatol 2014;59:442-4.

20. Badi KA, Khan SA. Formulation, evaluation and comparison of the herbal shampoo with the commercial shampoo. Beni-Suef Univ J Basic Appl Sci 2014;3:301-5.
21. Gaud RS, Gupta GD. Practical Physical Pharmacy. 1st ed. New Delhi: C.B.S. Publisher and Distributer; 2001. p. 81-105.
22. Manikar AR, Jolly CI. Evaluation of commercial herbal shampoos. Int J Cosmet Sci 2000;22:385-91.
23. Klein K. Evaluation of shampoo foam. Cosmetic Toilet Mag 2004;119:32-5.

