



EVALUATION OF POLYHERBAL ANTIDANDRUFF SHAMPOO

Dr. Satendra Kumar¹, Dr, Anil Kumar²

¹L.N Pharmacy College. Baitalpur, Deoria- U.P.

²Pharmacy College, Itaura, Chandeshwa, Azamgarh-U.P.

ABSTRACT

Hair-care products may be defined as the preparations which are used for cleansing hair and scalp, modifying the texture and giving the healthy look to the hair. Herbal shampoos are more effective and safer for the skin and human body. There are various types of hair like normal, oily and dry dandruffs is the common problem of hair now a today. It is the condition that produces flakes on scalp skin, followed by itching on skin. Dandruff is a non-inflammatory and chronic condition which is characterised in the most common dermatological skin problem, related to the scalp that is eminent by an excessive range of scalp tissue being affected. The problems of hairs include hair falling, white hair, dandruff, and split end hair etc. The reasons of hair problem are tension, scalp infection, hormones disturbances, food and large chemical shampoo use. To overcome these entire problems, the polyherbal powder shampoo is formulated using natural ingredients with *Acacia concinna* (Shikakai), *Lawsonia inermis* (Henna), *Aloe vera* (Aloe), *Ocimum sanctum* (Tulsi), *Azadiracta indica* (Neem) and Fenugreek (Methi) etc. with fewer side effects.

Keywords- Shampoo, polyherbal, dandruff. *Amla*, *Ocimum*. *Azadiracta*, Fenugreek.

INTRODUCTION

Hair-care products may be defined as the preparations which are used for cleansing hair and scalp, modifying the texture and giving the healthy look to the hair. There are various types of hair: normal hair, oily hair, dry hair, varies from one human to another human ^[1]. Dandruff is becoming the major and common problem of hair nowadays. It is the condition that produces flakes on scalp skin, followed by itching on skin. Dandruff is a non-inflammatory and chronic condition which is characterised in the most common dermatological skin problem, related to the scalp that is eminent by an excessive range of scalp tissue being affected ^[2]. The problems of hairs include hair falling, white hair, dandruff, and split end hair etc. The reasons of hair problem

are tension, scalp infection, hormones disturbances, food and large chemical shampoo use^[3]. Dandruff is a cluster of coenocytes retained by cohesion with one another and detach from surface of stratum carenum. Parakeratosis cells often make up a part of dandruff. In physiological spectrum of scaling about 487,000 cells/sq cm get released after detergent treatment.^[4] The main cause of dandruff is not visible properly, but there are multiple factors such as, oily scalp, poor hygiene leading to fungal infection and it appears more often if the hair is not washed for a week. The use of dirty water and at poor families where anti-dandruff tools are expensive, it occurs frequently. A yeast-like fungus, *Malassezia*, feeds on oils on the scalps of most adults, dry skin, sensitivity to hair care products or contact dermatitis, other skin conditions, such as psoriasis and eczema are also the causative factors behind dandruff. It causes embarrassment in public places and hair loss^[5] During the past decades there has been increase in use of natural products in cosmetics. Natural botanical uses their crude form, purified extracts. Many herbal shampoos available in market contains herbal ingredients such as plant extracts and essential oils. Tulsi, Henna, Neem, Lemon, shikakai are commonly used plants in shampoo formulations of which some's how anti-dandruff activity^[6] To overcome these entire problems, the polyherbal powder shampoo is formulated using natural ingredients with *Acacia concinna* (Shikakai), *Lawsonia inermis* (Henna), *Aloe vera* (Aloe), *Ocimum sanctum* (Tulsi), *Azadiracta indica* (Neem) and Fenugreek (Methi) etc. with fewer side effects.

Definition of Shampoo. A shampoo may be described as a cosmetic preparation meant for the washing of hair and scalp, packed in a form convenient for use. Its primary function is of cleansing the hair of accumulated sebum, scalp debris and residues of hair-grooming preparations. The added functions of shampoo include lubrication, conditioning, bodybuilding, prevention of static charge build up, medication and so on. Finally, the complete shampoo formulation must be medically safe for long-term usage^[7]

Classification of Dandruff:

Depending upon the symptoms the dandruffs classified into two main types

A. Dry dandruff.

B. Oily dandruff.

A) Dry dandruff: It is also called as pityriasis simplex characterize by excessive formation of minute scales which accumulate on the scalp area. In this type of dandruff there is no excessive hair loss. The inflammation on the skin is not observed. The scales are first found in middle of the scalp and then spread to frontal, parietal and occipital areas.

B) Oily dandruff: It is also called as pityriasis steatoides. It arrives on the scalp with sebum production. It is mostly found in young men following puberty. Inflammation of varied intensity developed on the scalp along with oily scales of dirty yellow color. Hair fall is most commonly found in this condition. The most common site affected by this type of dandruff is scalp, behind the ears, over breast bone, armpits^[8]

The action of shampoo on hairs.

The original prime function of the shampoo is to clean the hair. There are three types of hair soil to be dealt with. These are oily that soil or sebum, soluble soils, and insoluble particulate soils. All three types of soil require being wetted; thus, surface tension of the water is reduced by the shampoo surfactant allowing full contact with the soil's surface. Any soluble soil is then removed in the aqueous medium. A process known as rollup, i.e., the displacement of the soil by the detergent solution, removes oily soil or sebum. Insoluble particulate soils tend to be removed by electrostatic repulsion between the soil and the hair fiber assisted by repulsion between the surfactant molecules adsorbed onto the hair fiber and those dissolved onto the soil. In the process of soil removal, the detergent micelles make contact with the lipid surface for a finite time during which they take up an increment of lipid. This is assimilated to form lipid-detergent co-micelles which detach and float away into the bulk aqueous solution.^[9]

EXPERIMENTAL WORK AND METHODOLOGY ^[10,11,12]

The different parts of the plants selected for the study having hair care property which is already proved. All the ingredients were purchased from local market of Gorakhpur and Deoria. The lists of herbs used are depicted in this table.

Table 1

Sr. No	Plant Name	Family	Botanical Name	Part used	Purpose
A	Hibiscus	Malvaceae	<i>Hibiscus rosa-Sinensis</i>	Flower	Hair tonic
B	Lemon	Rutaceous	<i>Citrus limon</i>	fruits	Detergent
C	Neem	Lamiaceae	<i>Azadiracta indica</i>	leaves	Antimicrobial
D	Henna	Lythraceous	<i>Lawsonia Inermis</i>	leaves	
E	Tulsi	Lamiaceae	<i>Ocimum sanctum</i>	leaves	Antimicrobial
F	Shikakai	Fabiaceae	<i>Senegalia rugata</i>	Bark	Antimicrobial
G	Brahmi	Plantaginaceae	<i>Centella asiatica</i>	leaves	Hair tonic
H	Liquorice	Leguminosae	<i>Glycyrrhiza glabra</i>	stolon	Detergent
I	Ritha	Sapindaceae	<i>Sapindus mukorosis</i>	fruits	Detergent
J	Amla	Euphorbiaceae	<i>Phyllanthus Emblica</i>	fruits	Hair tonic
K	Bhringraj	Asteraceae	<i>Eclipta prostrate</i>	leaves	Hair Growth

Composition of Anti-dandruff hair pack

Table 2

Sr. No	Plants Name	Part of plant	Quantity
1	Hibiscus	Leaves	50gm
2	Lemon	Fruits	50gm
3	Neem	Leaves	15gm
4	Henna	Leaves	50gm
5	Tulsi	Leaves	25gm
7	Brahmi	Leaves	25gm
8	Liquorice	Stolon	25gm
9	Ritha	Fruits	25gm
10	Amla	Fruits	50gm
11	Bhringraj	Fruits	25gm
12	Shikakai	Bark	15gm

The parts of herbs were collected and dried in the sunlight. The dried herbs were powdered and weighed accurately. All the materials, as shown in table 1 were mixed homogenously in the mortar pestle and make a Novel of Formulation. which have several properties like-

It is in the form of a pack.

No artificial additive has been incorporated.

The constituents are easily accessible, so they can be prepared easily at home.

It can be made freshly before use.

Application of Anti-dandruff Hair Care Formulation

The pack or coarse pack should be applied on a weekly basis on hair, as a semi-solid paste in lukewarm water, as it increases the efficiency of the constituents, with required consistency. It should be spread evenly on the hair with the help of a brush, from roots to the hair tip. It should be left for 30 minutes for full drying. Then it should be removed by treating with plain water. An Anti-Dandruff Hair Pack have useful for nourishes hair, stops graying of hair, reduces hair loss, Induces shine and luster to the hair

EVALUATION TEST FOR SHAMPOO

1. Visual inspection

The formulation prepared were evaluated in terms of their clarity, foam producing ability and fluidity. ^[13,14]

The formulated shampoo were observed for their visual appearance, color, odor, Texture.

Sr. No	Visual Inspection	Result
1	Appearance	Coarse Powder
2	Texture	Fine
3	Color	Greenish Brown
4	Odor	Characteristic

2. Physicochemical Evaluation

The physicochemical studies of the formulations were performed as per Table 3, to analyse the physical and chemical aspects, including pH of the formulation, ash value, and loss on drying

Table -3

Sr. NO	Test	Result
1	Ash Value	3.0% w/w
2	pH	6.8
3	LOD (Loss on drying)	1.26% w/w

3. Phytochemical Evaluation

Various tests were performed, as mentioned in below to identify the phytoconstituents present in the products and their effect is shown on the body. Every plant exhibits certain phytochemical properties, which show a number of beneficial effects.

Table-4

Sr. No	Test	Observation	Report
1	Biuret Test	Presence of Proteins	Negative
2	Fehling's Test	Presence of Carbohydrate	Positive
3	Volatile Oil Test	Presence of Volatile Oil	Negative
4	Foam Test	Presence of Saponin	Positive
5	Hager's Test	Presence of Alkaloid	Positive
6	Molisch's Test	Presence of Carbohydrate	Positive
7	Mayer's Test	Presence of Alkaloid	Positive

4. Foaming ability and foam stability: -

The total volume of foam content after 1 minute shaking were recorded. The foam volume was calculated only. Immediately after shaking the volume of shaking the volume of foam at 1-minute intervals for 4 minute were recorded. [15,16]

5. Determination of PH: -

Take PH Paper strip and place on a white tile. Pour a drop of the sample on the PH paper using a clean dropper. Observe the colour of the PH Paper. Now, compare colour obtained on the PH paper with different colour shade of the standard colour PH chart and note down the PH value. [17]

The other way to determine the PH value of formulated shampoo was determined by using digital pH meter by dissolving 1gm shampoo in 100ml of water

6. Percent of solid content: -

A clean dry china dish was weighed and added with 4 grams of shampoo. the dish with shampoo was weighed. The exact weighed of the shampoo was calculated. The china dish with shampoo was placed on the hot plate until the liquid portion was evaporated. The weighed after drying was calculated. ^[18,19]

7. Dirt dispersion-

Two drops of shampoo were added in a large test tube contain 10 ml of distilled water. 1 drop of India ink was added; the test tube was stoppered and shakes it ten times. The amount of ink in the foam was estimated as None, Light, Moderate, or Heavy

8. Skin irritancy: -

Skin irritancy of shampoo can be checked by taking small amount of product on skin, after few minutes to check whether local irritation or any inflammatory reaction are produced or not^[20]

Table -5

Sr. No	Observation	Result
1	Swelling	Nil
2	Redness	Nil
3	Irritation	Nil

9. Antimicrobial Activity

In this method the agar is melted, cooled at 45°C, inoculate with the test microorganism and then pour in the sterile petri plate. In this method when the agar plate has been solidified then holes about 9mm in diameter in the medium with sterile cork borer, Then the antimicrobial agent are placed in the hole and in another hole placed marketed formulation acts as standard, the diameter of zone of inhibition were measured after inoculation at 30-35°C for 2-3 days. The diameter of zone of inhibition gives an indication of the relative activity of different antimicrobial substance against tested microorganism Natural Remedies are more acceptable as they are safer with fewer side effects than synthetic once, so an herbal anti dandruff shampoo is nontoxic, safe, effective and improve patient compliance as it contains herbal ingredient. From the ancient time. These prepared herbals anti-dandruff shampoo was evaluated for various parameters like appearance, determination of consistency, pH, Foam stability and antimicrobial activity against *Staphylococcus aureus* [21].

10. Stability Studies

The powdered formulation was stored for some time under different temperatures (35°C and 40°C) and humidity conditions, and the change in the physical properties was observed ^[22]

Table -6

Sr. No	Observation	Result
A	Change in Colour	Nil
B	Change in Odour	Nil
C	Change in pH	Nil
D	Change in Texture	Nil
E	Change in Smoothness	Nil

RESULTS AND DISCUSSION.

Amla supplies more nutrients and antioxidant content to nourish hair, also prevents free radical damage to hair follicles because of dandruff. Amla with its vitamin C, anti-inflammatory and anti-bacterial properties can stop dandruff formation.

Bhringraj prevents scalp issues as irritation due to dandruff, so that hair growth remains unhindered. It acts as an antioxidant to cleanse the scalp due to sebum deposition, opens blocked pores, kills bacteria and promotes hair growth. It conditions hair and also removes dandruff. It has antimicrobial and antifungal properties that can help reduce dandruff, which can help psoriasis or other skin irritations on the scalp. It is also said to improve circulation to the scalp.

Hibiscus carries amino acids, Vitamin A, C and alpha hydroxyl acids that are extremely nice for scalp and healthy scalp is a must for the removal of dandruff from hair. Hibiscus has astringent properties, which help reduce the oil gland secretions and excessive oil secretion of the scalp. This property of the flower helps cool and soothe scalp providing relief from itchy scalp and dandruff.

Neem treats clogged pores and increases hair growth. The anti-fungal properties of neem do wonders in fighting dandruff.

Tulsi reduces itchiness caused by dandruff and is an excellent anti-microbial plant.

Ritha improves blood circulation and is capable of revitalizing the hair follicles and facilitating hair growth, to cope with the air loss caused by dandruff.

CONCLUSION

The main aim of formulated herbal anti-dandruff shampoo was to prevent dandruff and their infections. It was concluded that the anti-dandruff shampoo which are prepared from natural sources they show fewer side effect as compared to shampoo which are prepared from synthetic compound. The prepared wound shampoo was evaluated using various parameter and was found to be satisfied for the application to the hair. The synthesized anti-dandruff herbal hair formulation is loaded with the goodness of natural herbs along with the active Phyto-constituents. It nourishes hair mildly by acting as an anti-dandruff agent. It effectively removes excess oil from the scalp, which is the major root cause behind dandruff.

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