



FORMULATION AND EVALUATION OF HERBAL ANTI-DANDRUFF SHAMPOO

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ABSTRACT

The main goal of present research was to formulate and evaluate the anti-dandruff activity of shampoo which was prepared from herbal plant. Dandruff cannot be completely eliminated but can only be managed and effectively controlled. Herbal medicines has become a global important for both medical and economical. The anti-dandruff shampoo prepared from herbal plant are more efficacious than synthetic medicines and which shows some adverse effect. Although uses of herbal plants instead of systemic medicines which have ability to improve the quality, efficacy and safety of the cream. This study investigated the anti-dandruff activity of “Sapindus mukorossi” (Retha) and “Acacia concinna” (Shikakai) “Zingiber officinale” (Ginger) to clear the dandruff from scalp. The two plant which are selected for the preparation of anti-dandruff shampoo shows antimicrobial and anti-inflammatory activity.

Keywords: Anti-dandruff, evaluation, formulation, shampoo, scalp, natural.

INTRODUCTION

Dandruff

Dandruff involves flakes of skin (dead skin cells) which will combine with oil, dirt particles and form dandruff. It is also caused by the naturally occurring fungus like *Malassezia furfur* and is associated with seborrheic dermatitis (a skin condition that causes scaly patches and red skin mainly on scalp). Dandruff is not contagious or serious condition but sometimes it may create problem to treat. Normally each skin cells shed off at certain time period, in this case the shredded cells will combine to form the dandruff. *Malassezia globosa* is a fungus that metabolizes triglycerides present in the sebum to oleic acid under the influence of lipase enzyme. During dandruff the levels of oleic acid increases where it penetrates to epidermis – stratum corneum and cause an inflammatory response and results in cleavage of stratum corneum cells¹

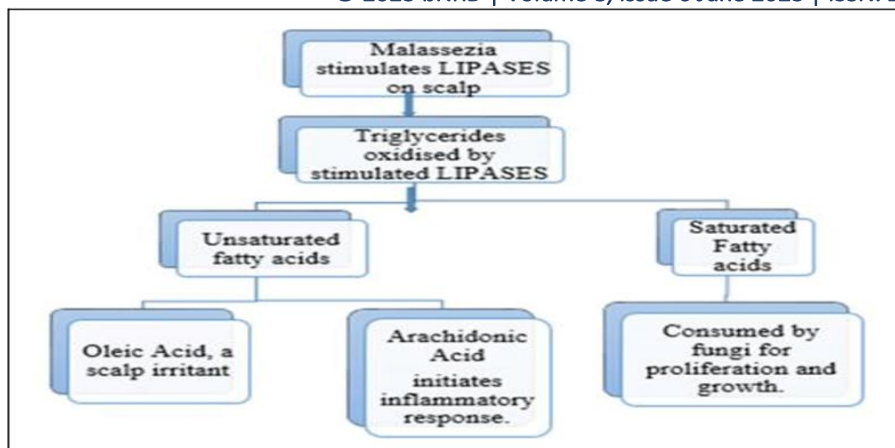


Fig. 1. Represents the mechanism by which malassezia furfur causes dandruff ²

TYPES OF DANDRUFF

Depending upon the symptoms the dandruff is classified into two main types

1. Oily dandruff
2. Dry dandruff

1. Oily Dandruff (Pityriasis Steatoides)

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.³

2. Dry Dandruff (Pityriasis sicca)

It is also called as pityriasis steatites. 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.⁴

Etiology of Dandruff

Based upon the most recent evidence, the etiology of dandruff and seborrheic dermatitis appears to be dependent upon three factors: sebaceous gland secretions, microfloral metabolism, and individual susceptibility⁵

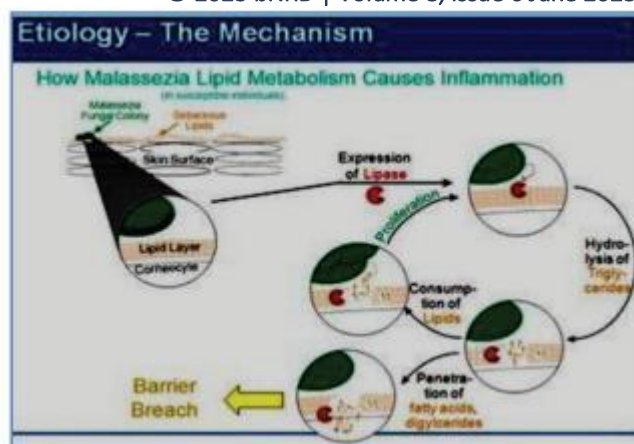


Fig.2. Etiology of dandruff formation⁶

SIGNS AND SYMPTOMS OF DANDRUFF

□

- ✓ If you have dark skin⁷
- ✓ Irritated and oily skin
- ✓ Not maintaining clean hygiene and not shampooing enough, as it causes skin cells to accumulate and create flakes and itching.
- ✓ A reaction of our immune system to a type of yeast that lives on the skin called a *Malassezia globosa*.

The signs and symptoms may be more severe if you are stressed, and they tend to flare in cold, dry seasons⁸

SHAMPOO

Shampoo is a preparation of a surfactant (Surface active agents) in a suitable form – liquids, solid or powder – which when used under specified conditions will remove surface, grease, dirt and skin debris from the hair and scalp without adversely affecting the user. The herbal shampoo is a cosmetic preparation in which herbs are collected from plants and it is likely a regular shampoo that is usually meant for washing the hair and scalp. Now a day's herbals help people in building their good health with the help of natural sources

IMPORTANCE OF THIS FORMULATION

- The selection of active ingredients for hair care shampoo is often based on the ability of the ingredient to prevent damage
- to skin as well as to improve the quality of the skin by way of
- cleansing, nourishing, and protecting the skin. □ □
- It produces a good amount of foam to satisfy the psychological requirements⁹

ADVANTAGES OF SHAMPOO

- It is pure and it involves organic ingredients.
- Free from side effects.
- There is no use of synthetic additives.
- It is skin friendly.¹⁰
- Regular usage of herbal shampoo can do wonders for your hair. □
- A perfect oil balance is achieved by using herbal shampoo. □
- They consist of natural essential disinfectant properties that protect hair and scalp from the harsh UV rays of the sun and prevent skin infections.¹¹

IDEAL PROPERTIES OF SHAMPOO

1. It should conduct a affable fragrance to the hair.
2. It shouldn't beget any side - goods/ vexation to skin or eye.
3. It shouldn't make the hand rough and chapped.
4. To make the hair smooth and candescent.
5. Produce good quantum of froth.
6. Shouldn't beget irritant to crown, skin and eye.
7. Should fully, effectively remove dirt.
8. conduct affable scent to hair¹²

TYPES OF SHAMPOO

1. Powder shampoo
2. Liquid shampoo
3. Cream shampoo
4. Jelly shampoo
5. Aerosol shampoo
6. Keratin shampoo
7. Volumizing shampoo¹³

DRUG AND EXICIPIENT PROFILE

1) Retha (*Sapindus mukorossi*)



Fig.8.Retha (*Sapindus mukorossi*)

Scientific name: *Sapindus mukorossi*

Parts used: The seeds

Chemical Constituents:

- The major constituents present in Reetha are saponins, sugars and mucilage.
- The seed kernels of Reetha are a rich source of proteins and show a balanced amino acid composition as per the World Health Organization.
- In addition to proteins, sugars and fibres are also present.

Uses:

- foaming agent
- used for removing lice from hair.

2) Shikakai (*Acacia concinna*)



Fig.9.Shikakai (*Acacia concinna*)

Scientific name: (*Acacia concinna*)

Parts used: Pods, Leaves, and Bark

Chemical Constituents:

Lupeol, spinasterol, acacic acid, lactone, and the natural sugars glucose, arabinose and rhamnose. It also contains hexacosanol, spinasterone, oxalic acid, tartaric acid, citric acid, succinic acid, ascorbic acid, and the

alkaloids calyctomine and nicotine.

Uses:

Make hair Soft and shiny

Work as hair cleanser

Boosts Hair Growth

Fight Dandruff

3) Ginger (*Zingiber officinale*)



Fig. 10. Ginger (*Zingiber officinale*)

Scientific name: *Zingiber officinale*

Parts used: Roots

Chemical Constituents:

The phenolic compounds in ginger are mainly gingerols, shogaols, and paradols.

Uses:

treatment for dandruff, hair loss, and scalp conditions

4) Orange Peel (*Citrus x aurantium*)



Fig. 10. Orange Peel (*Citrus x aurantium*)

Scientific name: *Citrus x aurantium*

Parts used: Orange Peel

Chemical Constituents

The predominant components of the mixture were limonene (45%–73%), citral (0.7%–3%) and linalool (0.5%–15%)

Uses:

- it control your dandruff, but it also improves the blood circulation level
- leading to more lustrous hair and less hair fall.¹⁴

MATERIAL AND EQUIPMENT USED**TABLE. 1. LIST OF MATERIAL USED**

PLANT	QUANTITY
Retha	30g
Shikakai	30g
Ginger	10g.
Orange peel	Q.S.
Water Q.S	Q.S.

PROCEDURE:**Formulation of Herbal Anti-Dandruff Shampoo**

- Retha - 30g
- Shikakai - 30g
- Ginger - 10g.
- Orange peel - Q.S.
- Water Q.S - Q.S.

Crush all ingredients into powder form. Add sufficient quantity of water³¹

EVALUATION PARAMETER OF SHAMPOO**1. Physical Appearance / Visual Inspection**

The formulation prepared was evaluated for the clarity, color, odor and foam producing ability.

2. Skin irritancy

Skin irritancy of shampoo can be checked by taking small amount of product on Skin. After few minute to check whether local irritation or any inflammatory reaction are produced or not.

3. Determination of pH

The pH of 10% v/v shampoo solution in distilled water was measured by using pH meter at room temperature.

4. Determination of percentages solid content

4 gram of shampoo were placed in a previously clean dry and weighted evaporating dish. The dish and shampoo was weighed again to confirm the exact weight of shampoo. The liquid portion of the shampoo was evaporated by placing the evaporating dish on the hot plate. The weight and thus % of the solid contents of shampoo left after complete drying was calculated.

5. Surface tension measurement

Measurements were carried out with a 10% shampoo dilution in distilled water at room temperature. Thoroughly clean the stalagnometer using chronic acid and purified water, because surface tension is highly affected with grease or other lubricants. The data calculated by following equation given below:

$$R2 = (W3 - W1) N1R2 / (W2 - W1) N2$$

Where

W1 is the weight of empty beaker

W2 is the weight of beaker with distilled water

W3 is the weight of beaker with shampoo solution

N1 is the number of drops of distilled water

N2 is the number of drops of shampoo solution

R1 is the surface tension of distilled water at room temperature

R2 is the surface tension of shampoo solution

6. Foaming ability and Foaming stability

Foaming ability was determined by using cylinder shake method. Briefly 50 ml of the 1% commercial or formulated shampoo solution was placed into a 250ml graduated cylinder, it was covered with one hand and shaken 10 times. The total volume of the foam content after 1 minute of shaking was recorded.

7. Wetting time

The canvas was cut into 1 inch diameter discs having an average weight of 0.44g. The disc was floated on the surface of shampoo solution of 1% w/v and the stop watch started. The time required for the disc to begin to sink was measured acutely and noted as the wetting time.¹⁵

RESULT AND DISCUSSION

PHYSICOCHEMICAL EVALUATION OF FORMULATED HERBAL ANTI-DANDRUFF SHAMPOO

TABLE NO . 2 : PHYSICAL APPEARANCE/VISUAL INSPECTION

SR. NO.	FORMUATION	FORMULATION
1	A1	Brownish, Levender
2	A2	Brownish, Levender
3	A3	Brownish, Levender

TABLE NO. 3 : SKIN IRRITATION TEST

SR. NO.	FORMULATION	SKIN IRRITATION
1	A1	NO IRRITATION
2	A2	NO IRRITATION
3	A3	NO ORRITATION

TABLE NO .4: DETERMINATION OF PH

SR. NO.	FORMULATION	PH
1	A1	6.2
2	A2	6.3
3	A3	6.5

TABLE NO 6.: DETERMINE PERCENT OF SOLIDS CONTENTS.

SR. NO.	FORMULATION	SOLID CONTENT
1	A1	1.1
2	A2	1.3
3	A3	1.2

TABLE NO 7: SURFACE TENSION(DYNES/CM) OF HERBAL SHAMPOO

SR.. NO.	FORMULATION	SURFACE TENSION
1	A1	34
2	A2	36
3	A3	37

TABLE NO :8 : FOAMING ABILITY AND STABILITY TEST

SR. NO.	FORMULATION	FAOMING ABILITY
1	A1	STABLE
2	A2	STABLE
3	A3	STABLE

TABLE NO 9 : WTTING TIME

SR. NO.	FORMULATION	WETTING TIME
1	A1	3 MINS
2	A2	4 MINS
3	A3	3 MINS

DISCUSSION

Herbal shampoo formulation is mainly composed of herbal extracts which were found as rich source of useful chemical constituents. Parts of plants such as Reetha, had been reported hair growth, anti-dandruff, cleansing and conditioning actions. All the required quantity was collected and the necessary evaluation parameters shown positive and acceptable results. The results depicted in study shows that when these herbal extracts are incorporated in shampoo it gives effective product with good appearance and patient compliance. The pH of shampoo is good which helps in improving the hair texture and maintains the pH of scalp. The evaluation parameters like visual inspection, pH determination, solubility check, viscosity determination, surface tension measurement etc. are carried out and the results were good

SUMMARY AND CONCLUSION

This herbal shampoo was not only safer than the synthetic shampoo but it also reduces the dandruff. The main purpose behind this preparation was to develop stable and effective antidandruff shampoo by excluding the all types if synthetic additives, which are used in normally such type of shampoo formulations. The ingredient used in this shampoo preparation is shikakai, ginger, reetha are used. These products are safe and free from side effects. This study states that it is necessary to develop a stable and effective herbal shampoo without the use of synthetic chemicals. The main purpose of this study was to develop a stable, functionally effective shampoo. The purpose of this study was to make an herbal shampoo that gives hair a smooth and smooth effect and is safer than chemical conditioning agents.

Research Through Innovation

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