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Herbal Shampoo for Treatment of Anti-Dandruff

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Abstract:*A typical issue that affects the health of the scalp is dandruff, which is brought on by the Pittosporum yeast. Dandruff can only be adequately treated and controlled; it cannot be entirely eradicated. Shampoo formulations contain suitable surfactants (also known as surface active substances) in the form of liquids, solids, or powders. Under certain circumstances, these formulations can be used to clean the scalp and hair shaft without endangering the user. Removes dead skin, surface debris, and surface oils from the effects. To treat dandruff, a variety of antifungal ingredients are employed inhair care products. These drugs have a wide range of unpleasant side effects, including hair loss, increased dandruff, scratching, pain, nausea, and headaches. The major objective of the current study was to develop and assess the anti-dandruff properties of shampoo made from herbal plants. Dandruff can only be adequately managed; it cannot be entirely eradicated. Herbal remedies are now widely used for both medicinal and economic purposes. Anti-dandruff shampoo made from herbal plants is more effective than synthetic drugs, which can have side effects. Although the quality, efficacy, and safety of the cream can be improved by using herbal plants rather than systemic medications. In order to remove dandruff from the scalp, this study looked into the anti-dandruff properties of "Azadirachta indica" (Neem) and "Ocimum sanctum" (Tulsi).*

Keywords: Formulation, assessment, Tulsi, neem, and anti-dandruff activity of anti-dandruff shampoo.

I. INTRODUCTION

Regardless of gender or ethnicity, about half of post-pubertal people suffer from dandruff, a common scalp ailment. It usually causes itchiness. The role keratinocytes play in the expression and activation of immune responses during the development of dandruff is well established. Because it frequently gets worse in the winter, the degree of dandruff fluctuates from season to season. A specific shampoo can be used to treat the majority of dandruff. People who have dandruff have learned that the condition can cause social and self-esteem issues, providing both psychological and physiological grounds for treatment. Shampoo is a hair care product that is used to clean hair; it typically takes the shape of a thick liquid.

Shampoo is used to remove undesirable buildup from between hairs without eliminating too much sebum and causing the hair to become unmanageable. Shampoos are often created by mixing a co-surfactant, most frequently Cocamido propylbetaine, with water and a surfactant, most frequently sodium lauryl sulphate or sodium laureate sulphate. Herbal anti-dandruff shampoos have been developed and thoroughly tested as a result of the probable adverse effects of synthetic shampoos.

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Dandruff

- It is a harmless chronic ailment that manifests as white flakes of dead skin in the hair or on the shoulders when the scalp becomes oily or dry.
- Eventhough it isn't harmful, having dandruff can be embarrassing.
- Skin cells form continuously on the scalp, therefore shedding is inevitable.
- It is a regular process to remove dead skin cells. However, skin cells shed more quickly than usual when someone has dandruff. Skin cells cluster together and manifest as white flakes as a result of scalp oil.

Classification of Dandruff

A. Dry dandruff
B. Oily dandruff

A)Dry dandruff

It is also known as pityriasis simplex and is characterised by an excessive buildup of tiny scales on the scalp area. This type of dandruff does not cause a significant hair loss. There is no visible skin irritation. The centre of the scalp is where the scales are initially detected, and they then expand to the frontal, parietal, and occupational areas.

B) Oily dandruff:

Pityriasis steatites is another name for it. It enters the scalp together with the creation of sebum. After puberty, it is usually found in young men. On the scalp, varying degrees of inflammation as well as oily scales with a dirty yellow hue appeared. In this disorder, hair loss is most common.
This type of dandruff most frequently affects the scalp, the area behind the ears, the breastbone, and the armpits.

Cause:

In one investigation, it was revealed that dandruff might be caused by three things.
a) Sebum or sebaceous secretions are other terms for skin oil.
b) Skin microorganisms' metabolic waste products (mostly malassezia yeasts)
c) Individual vulnerability and sensitivity to allergies.
Microorganisms like propionobacterium and staphylococcus also have a significant influence in the development of dandruff. Some of the negative effects of the synthetic medicines found in shampoos include
a)Mild skin itching, dry skin, unusual hair texture, scalp pustules, rash, headache, eye and skin irritation, damaged hair follicles, and hair loss are some of the symptoms listed in (a).
b) Synthetic scents may cause nausea, vomiting, hyperpigmentation, rash, and dizziness.
c) Major relapses also happen when the medicine is stopped.

Cause of Dandruff:

Dry skin, irritated, greasy skin, and inadequate shampooing Additional skin conditions:
A.Eczema
B.Psoriasis Seborrheic dermatitis in
C.Malassezia-like yeast fungus
Reacting negatively to hair products (contact dermatitis)

Treatment

Use shampoo with a combination of particular ingredients to treat dandruff.
Maintain a balanced diet.

Herbal Shampoo:

They are cosmetic products that clean the hair and scalp in a manner similar to ordinary shampoo by utilising traditional ayurvedic herbs.
They are used to clean up pollution, dandruff, oils, and other substances.

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Advantages of Herbal Shampoo

Herbal shampoo is made from all-natural ingredients; there are no synthetic additives or surfactants in its formulation. Are without any negative consequences.

- Herbal shampoos are environmentally friendly and biodegradable.
- The eyes are not irritated by it.
- It is reasonably priced and cost-friendly.
- Herbal shampoo can work wonders for your hair when used frequently.
- By utilising herbal shampoo, one can attain the ideal oil balance.
- They have natural necessary disinfecting properties that shield the skin from infection and shield the hair and scalp from the sun's harsh UV rays.
- Enhancing hair hygiene by its cleansing abilities.
- Addressing ailments of the scalp.
- Care for dry scaling.
- An approach to hair loss.
- Treatment for oily or grease-prone hair.
- Relieves inflammation and itching.
- Heals split ends in hair.
- Shampoo maintains silky or smooth hair.
- Keeps your hair lush and gorgeous.

Ideal Properties of Shampoo

- To produce a good volume of foam;
- To make the hair lustrous and silky;
- and not to irritate the skin, eyes, or scalp.
- Should successfully and totally eliminate dirt.
- Give your hair a fragrant touch.
- Excellent biodegradability
- Low toxic level.
- Since a basic environment destroys hair by rupturing the disulphide bonds in hair keratin, it should be somewhat acidic (pH less than 7).

Types of Shampoo

1. Powder shampoo : initially prepared from dry soaps, but these days dry synthetic detergents are used to prepare it. It is available in the form of Dry Powder. When making powder shampoo, the activity of the ingredients is reduced by the addition of water or another solvent, especially when making medicated shampoo. These shampoos are no longer utilised in modern times because of the difficulties in using them.
2. Liquid shampoo : The most popular liquid preparations are those that are transparent. They are typically produced with low cloud point detergent. These shampoos could include translucent ones.
3. Cream shampoo : These are modified clear liquid Cream shampoos and are referred to as lotion shampoos. The added opacifier is also dissolved using solubilizing agents like magnesium stearate.
4. Jelly shampoo :These are thick and translucent. often produced by adding a gelling agent (e.g., cellulose). In beauty salons and hair salons, it is quite useful. Detergent, which can be used either alone or in combination with soap, is the main component.
5. Aerosol shampoo : Because they are contained in spray containers, these shampoos are known as aerosol shampoos. Due to the inclusion of an additional propellant, their formulation, preparation, and packaging are challenging. Thepropellant that is added ought to be compatible and shouldn't lessen the shampooing ingredients' activity. An aperture for the container has a valve. When the valve is depressed, foamy shampoo is released. As a result, foam type shampoo is also known.

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6. Keratin shampoo : If your shampoo (or any other hair care product) contains keratin oil, your hair will benefit from the nourishing and conditioning effects. Additionally, it aids in preventing frizz, controlling flyaways, and guarding against damage from styling appliances like a blow dryer or straightening iron.
7. Voluminzing shampoo : Increasing or volumizing Shampoos give hair a fuller, bouncer, and more full-bodied appearance. It has more to do with the hair's texture than its strand thickness. Instead, valominizing shampoos ought to be light enough not to weigh down your hair, which will ultimately result in greater body.
8. Specialised shampoo :People with dandruff, color-treated hair, gluten or wheat allergies, a desire to use an organic product, newborns, and young children are among the target markets for specialty shampoos ("baby shampoo" is less irritating).

II. CONDITIONER

A. Anti dandruff
B. Baby
C. Two layer
D. Anti hairfull

Table.1. Drug profile and Excipient

Sr.No	Common Name	Figure	Category
1	Neem		Antibacterial, Wound healing activity, skin ulcers, fever, cardiovascular diseases, liver problem.
2	Tulsi		Reduce gastrointestinal disorder, it relieve signs of asthma, antimicrobial, wound healing activity
3	Aloevera		Used in abrasion and skin irritation, Anti-inflammatory
4	Shikakai		Antifungal, Nourish follicles, curb dandruff

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5	Cetosteryl alcohol		Opacifiers in Shampoos, , emollient.
6	Sodium Lauryl Sulphate		Fat Emulsifier, Wetting agent, Detergent in Cosmetics.
7	Guar gum		Thickening agent, Stabilizing agent
8	Methyl Paraben		Antifungal, preservative.
9	Propyl paraben		Preservative, antioxidant and antimicrobial.

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10	Lavender oil		Flavoring agent, Skin application, Used in massage Therapy.
11	Glycerin		Minimizing the water loss, keeping the skin hydrated.
12	Purified Water		Solvent, Conditioning agent, Cleansing agent.

Objectives

To create an anti-dandruff shampoo with components like tulsi and neem. Evaluation of the appearance, percent solid content, pH, foam volume, and antibacterial activity against Staphylococcus aureus of the herbal antidandruff shampoo.

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III. MATERIAL AND METHOD

Curry leaves, Shikakai, Brahmi, Hibiscus, Amla, Bhringraj, Neem, Tulsi, Lemon juice, and Lavender Oil

A)Preparation of Plant Extract

Simple maceration was used to prepare the extract. First, we took 20 gm of each leaf from plants like neem and tulsi, shikakai, and ground them up in the air before soaking them in 200 ml of water for 48 hours. The residue was resoaked in the same solvent for 24 hours after the solvent had been decanted. After combining and filtering the entire extract, the solvent was evaporated on heating the mixture, which was then dried and kept in a desiccator for later use.

B)Formulation of anti-dandruff shampoo

Shampoo was created utilising a straightforward mixing procedure. Extracts of tulsi, shikai, and neem were blended with additional components as specified in formulation table no 1.

Method of Pre Dandruff:

1. Weighing : Each herbal ingredient needed to prepare shampoo was precisely weighed using a computerised balance.
2. Mixing : In the case of clear liquid shampoo, they are made using a straightforward mixing procedure. Combine all the ingredients, and for improved transparency, add lemon juice. Add lavender oil next for a nice scent.
3. Storage : Keep in an appropriate container.

IV. METHODOLOGY

PREPERATION OF EXTRACT

INGREDIENTS	QUANTITY
Brahmi	30gm
Hibiscus	20gm
Amla	20gm
Bhringraj	20gm
Neem	20gm
Tulsi	20gm
Curry leaves	10gm
Shikakai	20gm

Table 1: Ingredients for preparation of extract

Hot Maceration Method

The aforementioned ingredients were weighed into separate beakers, and 200 ml of distilled water was added to each beaker. Each beaker was then cooked on a hot plate with constant stirring for four hours.

Figure 1: Preparation of extract

Cold Maceration Method

200ml of distilled water and 40g of Reetha were combined in a beaker. After stirring, 5ml of methanol was added.

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Filtration Process:

The extract is once more filtered via filter paper with the aid of a funnel. The funnel is filled with hot water to remove any extra result.

Fig 2: Filtration of extract

Evaporation Process:

The filtered extract is then allowed to evaporate for 24 hours at room temperature. Then, for about 2-3 days, these Containers are placed in the refrigerator to allow the contents to dry. The formulation then starts.

Formulation:

Sr.no.	PREPARED EXTRACTS	QUANTITY
1.	Brahmi extract	1.5gm
2.	Hibiscus extract	1gm
3.	Amla extract	1gm
4.	Bringhraj extract	2gm
5.	Neem extract	1gm
6.	Curry leaves extract	1gm
7.	Tulsi extract	1gm
8.	Shikakai extract	2.5gm
9.	Reetha extract	0.5gm
10.	Glycerine	2ml
11.	SLS	2gm
12.	Lemon juice	2-3 drops
13.	Lavender oil	qs
14.	Purified water	100ml

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The plant extracts were combined in a variety of ratios to create the shampoo whose recipe is shown in the table above. Gaur gum solution (2g of gaur gum in 100ml of distilled water with 2ml of glycerine added) was blended with herbal extracts while constantly stirring. Lavender oil and lemon juice were added.

Figure 3: Formulated Shampoo

Evaluation

Several quality control tests, including as visual assessment and physicochemical controls conditioning performance tests, were carried out to assess and prepare formulations.

Physical appearance: Clarity, colour, odour, and the formulation's capacity to produce foam were all assessed.

Ph determination: Place the PH paper strip on the white tile. Using a clean dropper, place a drop of the sample on the PH paper. Look at the PH Paper's colour. Now. Calculate the pH value by comparing the colour on the PH paper to various colour shades on the standard colour PH chart.

Determination of % solid contents: In a clean, dry evaporating dish, 4 grammes of shampoo was measured and weighed. To check the precise weight of the shampoo, they were weighed once more. Using an evaporating dish on a hot plate, the liquid portion of the shampoo was evaporated. The weight % was then established.

Skin irritancy: By applying a small bit of shampoo to your skin, you can determine whether it will irritate it. Check in a few minutes to see whether any localised inflammation or other inflammatory response has occurred.

Wetting time test: Cut into discs with a 1-inch diameter and an average weight of 0.44 g, the canvas paper. The timer was activated after the smooth disc surface was put on the 1% v/v shampoo solution surface. The wetting time was recorded as the length of time it took for the disc to start to sink.

The formulation was assessed for various pharmaceutical factors:

A)Outward Appearance: The shampoo formulations were evaluated based on their visual appeal, clarity, colour, and consistency. Viscous in nature and appearance hues of brown

Transparence: Lack of Transparency, Continuity: Fluid

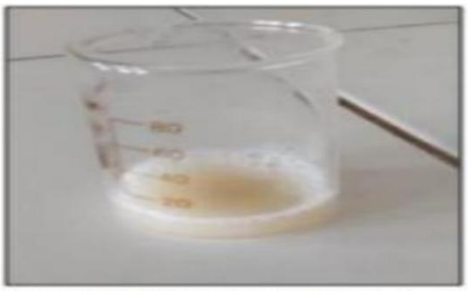

Figure.1. Formulated shampoo

B)pH : Using a digital pH metre and 1g of specially prepared shampoo dissolved in 100ml of water, the pH of the shampoo was measured.

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Figure.2. pH test

C)Consistency : By hand, the formulation of cream's consistency was determined. Grab a small amount of shampoo and rub it with your finger.

D)Percentage solid content : Weighing approximately 4g of shampoo in an evaporating dish allowed us to calculate the % solid content. Shampoo's liquid portion was evaporated by heating the container. In order to ensure complete drying, the weight and percentage of solid in shampoo were calculated.

Figure.3. Percentage solid content

E)Antimicrobial Activity : This procedure involves melting the agar, allowing it to cool at 450°C, inoculating it with the test microorganism, and then pouring it into a sterile petri dish. The antimicrobial agent is placed in the hole after the agar plate has solidified in this method, and a commercial formulation is placed in another hole to serve as a standard. The diameter of the zone of inhibition was measured after inoculation at 30-350C for 2-3 days. The size of the zone of inhibition provides a clue as to the relative effectiveness of several antimicrobial agents against the tested microorganisms.

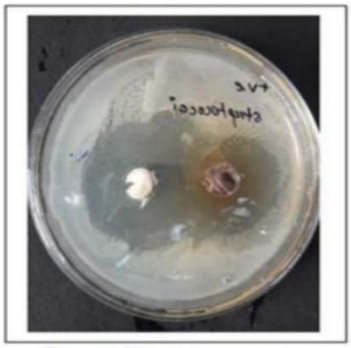

Figure.4. Streptococcus aureus

F) Stability Studies : By placing the cream in an environment chamber set at 450°C and 75% relative humidity, the stability of the formulation was evaluated. The stability of the formulation was examined over a period of three months, one month apart.

G)Washability : Formulations were applied to the skin, and the extent of water washing was personally evaluated.

H) Foam stability test : Foam stability was assessed using the cylinder shake method. A 250 ml measuring cylinder was filled with 50 ml of 1% shampoo, which was then shaken vigorously for 10 minutes. After one minute, the entire volume of the foam was measured, and the stability of the foam was assessed by monitoring the foam volume from one to four minutes. The fact that the foam volume stays constant over the course of roughly 5 minutes indicates that the

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shampoo's foam generation process has good stability, and the produced shampoo displays higher foam properties, which may be caused by the inclusion of soapnut.

Figure.5.Foam stability test

I)Nature of hair after washes : The reactions of volunteers can be gathered to determine the nature of the hair after washing.

J)Dirt dispersion : There were put two drops of herbal shampoo. 10 ml of distilled water are contained in a falcon tube with a wide aperture. The Falcon tube was covered, 1 drop of India ink was added, and it was shook ten times. None, Light, Moderate, or Heavy was the expected level of ink in the foam.

K)Cleansing action : By applying the shampoo to hair that had not been washed in seven days, the cleansing ability of the herbal shampoo was assessed. Human subjects whose hair had been oil-treated for four to five hours before washing were given a shampoo wash. The shampoo's effectiveness was evaluated based on its capacity to clean the scalp of greasy filth.

L)Conditioning attributes : The shampoo's conditioning impact on After the hair had been washed with it, it was appraised. All desired effects on the hair, such as increased mass, enhanced lustre, softness, and silkiness, are included in conditioning qualities.

Physicochemical evaluation of formulated and Marketed shampoo :

Physicochemical evaluation of formulated and marketed shampoo:

	Formulated Shampoo	Dove Shampoo	Meera shampoo
Color	Brown	White	Light Brown
Transparency	Clear	Milky Opaque	Transparant
Odor	Good	Good	Good
% Solid Content	22.75	25	25
PH (10% solution)	6.02 ± 0.09	6.12 ± 0.27	6.04 ± 0.36
Wetting Time test	187 ± 4	141 ± 3.46	157 ± 2

Table 3: Evaluation parameters

V. RESULT AND DISCUSSION

According to the current study, a stable and effective herbal shampoo should be developed without synthetic chemicals. The prepared herbal shampoo below reduces hair loss, encourages hair growth, and combats dandruff. SLS (a synthetic ingredient) is present in formulated herbal shampoo, albeit in lower amounts than in commercially available synthetic shampoo. Amla, Reetha, Shikakai, and other plant extracts are used in the created formulation in place of other synthetic compounds to provide effective conditioning benefits.

1) This shampoo might be used as a simple dose form to utilise these medicinal properties conveniently and efficiently.

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2) Patients are more willing to use natural remedies because they are less likely to experience side effects than synthetic ones. Because herbal anti -dandruff shampoo contains herbal ingredients, it is nontoxic, safe, and effective. Originating in antiquity.

3) These herbal anti-dandruff shampoo formulations underwent evaluation for a number of factors, including their appearance, consistency, pH, foam stability, and antibacterial efficacy against Staphylococcus aureus.

Eye irritation and skin irritation Test : The herbal shampoo powder showed no negative effects on the skin or eyes, according to tests for eye and skin irritability. This is caused by the lack of artificial surfactants. The majority of synthetic surfactants cause corneal irritation and eyelid inflammation. However, all of the constituents in this herbal shampoo powder composition have natural origins. Therefore, it has no negative effects on the skin or the eyes.

VI. CONCLUSION

1) Preventing dandruff and its infections was the major goal of the formulation of herbal anti-dandruff shampoo.

2) It was determined that anti-dandruff shampoo made from natural sources has less negative effects than shampoo made from synthetic compounds.

3) The created wound shampoo was tested using a number of parameters,and it was determined to be suitable for use on hair.