

**RESEARCH ON FORMULATION & *IN VITRO* EVALUATION OF
TRIDAX PROCUMBENS POWDER SHAMPOO****Shirish B. Nagansurkar, Sanjay K. Bais, Mangesh C. Pathak***Fabtech College of Pharmacy, Sangola**Tal-Sangola, Dist.-Solapur**Maharashtra -413307***ABSTRACT**

Shampoos serve several purposes for hair, including cleaning, glossing, managing oiliness, and maintaining manageability. There are many different kinds of shampoos. Regarding herbal shampoos and their stability requirements. These may be basic shampoo & antidandruff depending on the ingredients. Using conventional hair care medications, the herbal shampoo powder developed in this work.

Herbal cosmetics have the benefit of being less toxic and causing fewer allergic reactions. The proven utility of numerous ingredients over time. Therefore, we have found in the current experiment that the herbal shampoo has positive attributes and that further optimization will enhance its benefits for use as a cosmetic by humans.

Developing and evaluating a herbal shampoo powder using natural ingredients is the goal of the current study. that is safe and effective. It cleans out debris and dandruff, encourages hair development and shine, and fortifies and darkens hair. Of all the hair care products, shampoo is most likely the most popular. Given that human hair is a unique and treasured feature, shampoos are among the cosmetics used daily.

Keywords: *Herbal Shampoo, Evaluation, Standardization, Anti-Dandruff.*

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INTRODUCTION

The essential component of human beauty is hair. Since ancient times, people have used herbs to clean, style, and manage their hair. Synthetic agents have accounted for a significant portion of the market. Although their detrimental effects on skin, hair, and eyes have been known about for some time,^[1] The communities in these areas were drawn to herbal products because they were less costly and had fewer side effects. Shampoos and cleansers for hair are used for more than just cleaning; they also add shine, keep hair manageable, and reduce oiliness.^[2] There are many different kinds of shampoos. Regarding herbal shampoos and their stability standards. Depending on the components, they can be classified as basic shampoo & anti-dandruff shampoo, with hydrolyzed proteins, vitamins, and amino acids.^[3]

HAIR ANATOMY:

It consists of three different types of layers.

- A. Medulla
- B. Cortex
- C. Cuticle

A. Medulla:

It is primarily visible in thick hairs and is located in the centre of the shaft. It is made up 2-3 polyhedron cell rows with air spaces and pigment granules.

B. The Cortex:

Situated on the periphery of the medulla, it constitutes the crucial segment of the shaft. Longitudinal cells are involved, covering air in white hair and grains of pigment in dark hair.

C. The cuticle

Comprising a solitary layer of thin, flat, highly keratinized cells, it is the outermost layer of hair.

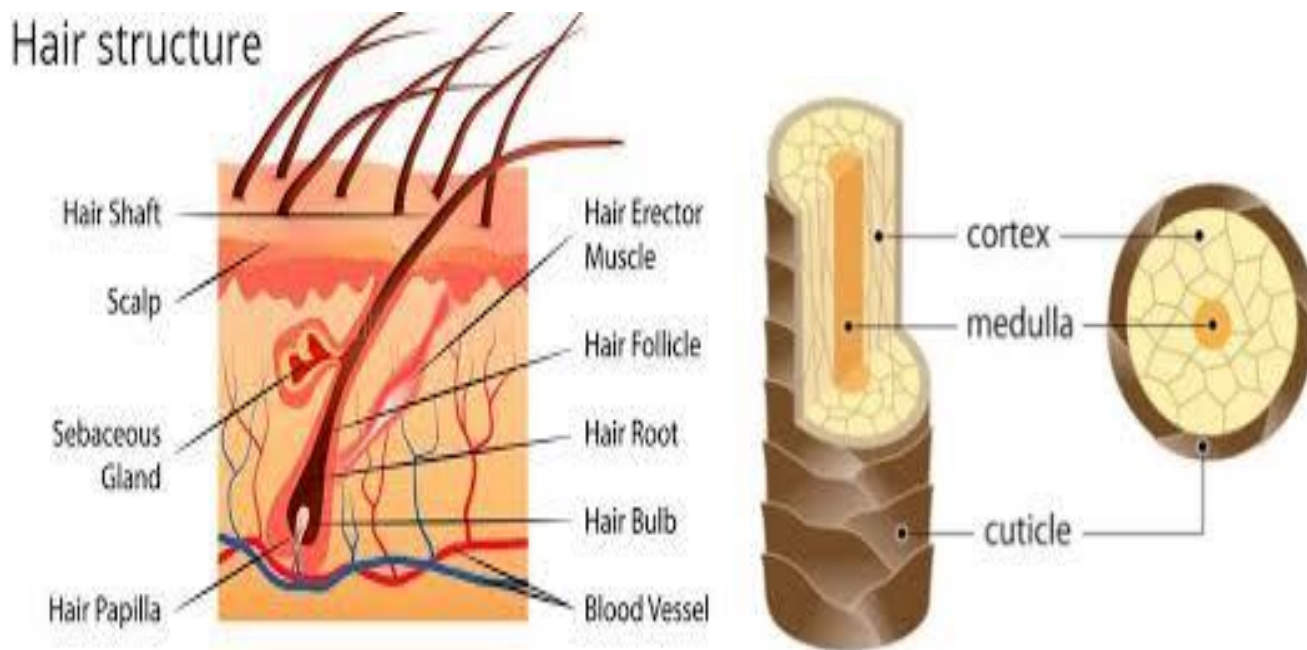


Fig. No.1: Structure of hairs

Problems related to hairs:

- a) Dandruff
- b) Dry Hairs
- c) Grey Hairs
- d) Hairs Loss

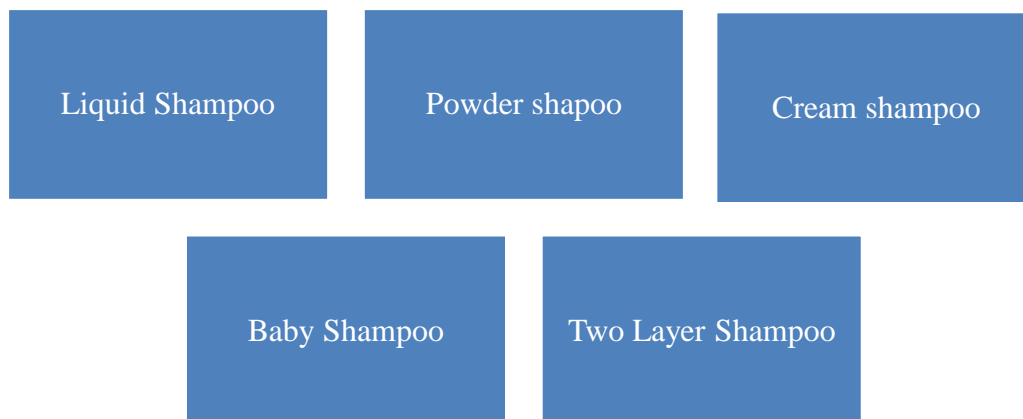
DANDRUFF:

The word "dandruff" describes a persistent, scalp scaling that is not irritating that is typified a significant desquamation of microscopic stratum corneum flakes. It is not a sign of any other skin problem. Dandruff is uncommon in the early years of life and infancy, but by adolescence, half of all males and females have it, and it can persist a lifetime. Scales may become dried out or lodged in a film or sebum. This is a benign, long-term ailment that manifests as greasy or dry scalp and white bits of dead skin that show up in the hair or on the shoulders. For those who have it, dandruff can be embarrassing even though it is harmless. The scalp is a site of continuous skin cell formation, thus the skin's natural process of removing dead cells normal process. However, skin cells shed more quickly than usual when one has dandruff. White flakes are the result of skin cells clumping together due to oil from the scalp.^[4]

Causes of Dandruff:

- 1.Oily skin
- 2.Dry skin
- 3.Not shampooing often enough.

SHAMPOO: A shampoo is a surfactant preparation that, when used according to the recommended conditions, can be liquid, solid, or powder.

SEVERAL KINDS OF SHAMPOO:**MATERIALS & METHODOLOGY:** ^[5-9]**MATERIALS:****1.Trifax procumbens:**

Synonym: Amellus pedunculatus Ortega ex Willd

Scientific Name: Trifax procumbens

Family: Asteraceae

Genus: Trifax

Kingdom: Plantae

Order: Asterales

Biological Source: Native to tropical America and Mexico, *Tridax procumbens* is a blooming plant also called coat buttons or tridax. It belongs to the Asteraceae family and can be found all over the world in tropical, subtropical, and mildly temperate climates.⁵



Fig. No.2: Tridax procumbens Powder

USES:

1. Ayurvedic traditional medication called *Tridax procumbens* is used to promote hair growth.
2. To improve hair texture and remove dandruff.
3. It is also used for the prevention of hair loss.
4. Also reduce in white hairs.

2.REETHA:

Synonyms : Soapnut

Scientific name : *Sapindus mukorossi*.

Family: Sapindaceae

Genus: *Sapindus*

Kingdom: Plantae

Order: Sapindales.

Biological Source: The dried fruits are from the *Sapindus Mukorossi* species, which is a member of the Sapindaceae family.⁶



Fig.No.3: Reetha Powder

USES:

1. It is used as the primary natural ingredients in shampoos & soaps for hair that has been laundered since it is thought to be beneficial for hair health.⁷
2. Due to its mild insecticidal qualities, Reetha is often used to get rid of lice from the scalp.
3. It is used as a surfactant and cleaner. Furthermore, it is employed in the management of psoriasis, eczema, and freckle removal.
4. It eliminates greasy skin secretions and, because it creates a natural lather, works well as both a hair cleanser and a hair tonic.⁸

3.MULTANI MITTI:

Synonyms: Fuller's Earth

Scientific name: Bentonite Clay

Biological Source: Fuller's earth, sometimes called multani mitti, is a clay-like material that develops when volcanic ash weathers in saltwater.⁹



Fig. No.4: Multtani Mitti Powder

FORMULATION:

Firstly, collect the all the ingredients then put for the drying process after the drying process completion the size reducing is done by using the mixier or the grinder. After the grinding process the weigh the all ingredients. Then the ingredients are one by one mix into the mortar pestle.¹³ In the mortar pestle the ingredients are properly mix and the mixture is forming the uniform. After this process completion then the mixture is pass from the sieve no.120 for obtain the fine powder. The obtaining powder is the final mixture of the powder shampoo. This powder is store in the well closed polyethene bag.¹⁴

FORMULATION TABLE:

For the 1 gm:

Sr No.	Ingredient name	Quantity (gm)
1.	Tridax procumbens powder	0.5
2.	Reetha	0.25
3.	Multani mitti	0.25

Table No.1: Formulation

For the 5 gm:

Sr No.	Ingredient name	Quantity (gm)
1.	Tridax procumbens powder	2.5
2.	Reetha	1.25
3.	Multani mitti	1.25

Table No.2: Formulation

PROCESS:

1. Collection and weighing all the ingredients:

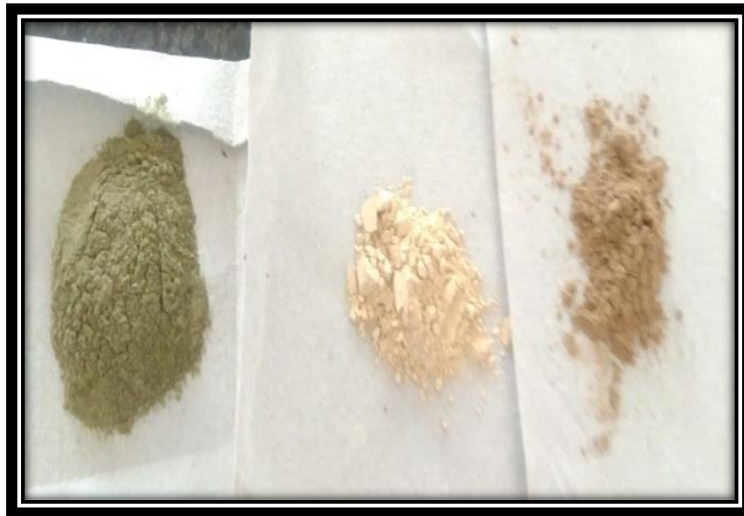


Fig. No.5: Various Ingredients

2. Forming the uniform mixture by using mortar pestle:



Fig. No.6: Mortar pestal

3.Mixture is passing form the sieve no.120



Fig. No.7: sieve no.120

4.The powder is stored in polythene bag:

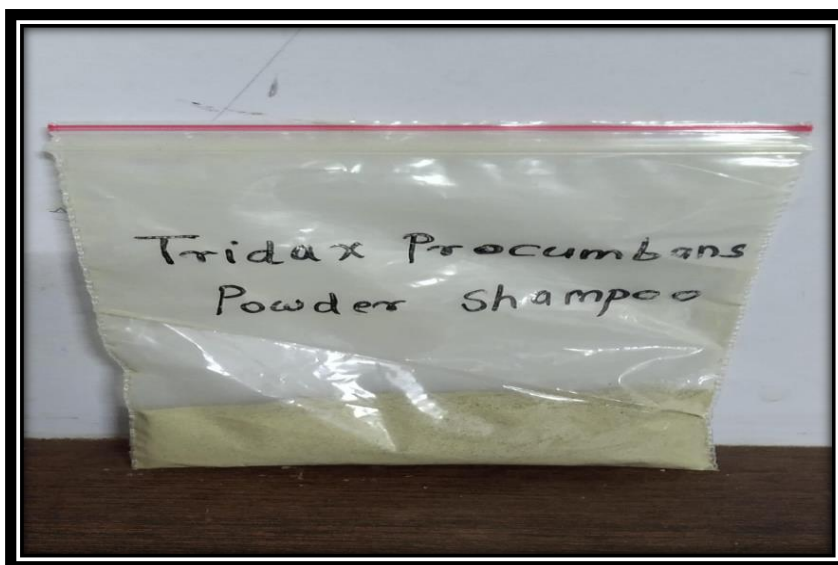


Fig No. 8: Tridax procumbens powder

EVALUATION OF THE POWDER SHAMPOO:

1. Organoleptic Evaluation:

Colour: Yellowish Green

Odour: Pleasant

Texture: Smooth

Taste: Bitter.

2.Physiochemical Evaluation:

pH

Skin irritation test

Foaming Test**Washability****Stability Study****Ash Value****a) pH :**

Take a 1 gm powder. Add sufficient water to it make a proper solution. Take a pH paper. After some time dip the pH paper in it and observe the readings .¹⁵



Fig No.9: pH Paper

Herbal shampoo has a pH between 5 and 6, according to the pH paper.

B) Test for skin irritation:**Use the open patch approach to treat skin inflammation.**

It is suggested that a patch test be performed on the skin prior to using a lot of cosmetic items, whether they are handmade or commercial.

This is to make sure that the product does not cause an allergic reaction, and if it does, it will only affect a tiny area of skin and be easily treated.

Step 1 - A small amount of the cosmetic preparation should be squeezed or poured onto wrist.

Step 2 - Put a small amount of the mixture on your wrist pulse or the bend of your elbow.

Step 3 - Give preparation good fifteen to twenty minutes without washing.

Step 4 - Seek out any indications of an allergic reaction. Redness, a rash, any kind of skin outbreak, itching, soreness, flaking, and so forth are typical symptoms. Additionally, some people might have breathed issues or nausea. Should any of these indications appear, stop using right away.

Step 5 - If you do not react, keep using the product. The preparation is probably safe for your skin type if you do not exhibit any symptoms of an allergic response.¹⁶



Fig No.10: Before applying the formulation



Fig No.11: Applying the formulation



Fig. No.12: After the washing the formulation

RESPONSES RECORDED:

Sr. No.	Responses	Yes	No
1.	Irritation		✓
2.	Spreadability	✓	
3.	Redness of Skin		✓
4.	Swelling of Skin		✓
5.	Itching		✓

Table No.2: Responses of Formulations**C) Foaming Test:**

After precisely weighing one gram of the powder, it was added to a conical flask with capacity of 250 ml that held 100 millilitres of hot water. Following a gentle 30-minute heating period, it is cooled, filtered, and then the volume is increased approximately 100 millilitres in a typical volumetric flask. This passage is divided into ten test tubes in portions of one, two, three, etc. Ten millilitres total, with the remaining volume being made up of ten millilitres of water. After that, there were fifteen shakes of the test tubes. seconds at a rate of two frequency intervals per second in a longwise motion. After that, the tubes are let to stand for fifteen minutes. It was measured how high the foam was.¹⁷

Performing the procedure:

The number is given from the right side.

**Fig No.13: Before the shaking the test tubes**

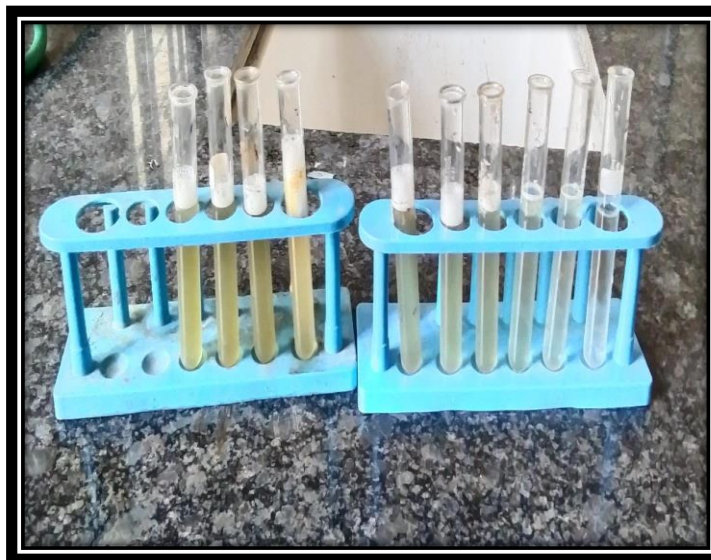


Fig No.14: After shaking the test tubes

Formula:

Foaming index = 1000/a

The maximum foam at test tube number 7.

$$\begin{aligned} &= \frac{1000}{7} \\ &= 142.85 \end{aligned}$$

d) Washability:

The skin was treated with formulations, and the degree and ease of water washing were personally assessed.

The formulation is applied on the skin then after some interval the skin wash with water. The formulation is easily washable.¹⁸

e) Stability:

The capacity of formulations to maintain their organoleptic qualities such as their color and odor during storage demonstrated their chemical and physical stability. kind of hair following a wash Volunteers' comments can be gathered to determine the type of hair after washing. This are some evaluation tests is performed for checking the product quality, purity and safety.

f) Ash Value:

This value serves to both identify and assess the quality and purity of the herbal shampoo powder.¹⁹

1.Total ash

2.Insoluble ash

1.Total ash:

The total amount of ash the inorganic constituents of a herb are ascertained by calculating the ash value. Two grams of powdered medication were placed in a silicon dish, lit, and measured. beforehand. The outside temperature was raised progressively raising the warmth until it reached a crimson colour. Ash is weighed when it has completely burned and cooled.²¹⁻²²

2.Insoluble Ash:

The amount of boiled ash indicates ash that is acid insoluble. for five minutes having 25 millilitres of HCl that has been diluted. The insoluble material is then gathered in a Gooch crucible, burned, and weighed.²⁰

RESULTS:

The formulation and *in vitro* evaluation of tridax procumbens successfully performed.

CONCLUSION:

Every parameter produces a positive outcome. The current study's findings demonstrate that adding these medications' active components to shampoo produces more stable, aesthetically pleasing products. The pH of the shampoo has been shown to have a major effect on hair quality, lessen ocular irritation, and preserve the scalp's natural equilibrium. One of the current trends aimed at avoiding hair damage is the promotion of shampoos with a lower pH. These outcomes are approximated using a formulation to determine robust outcomes for product utilization and positive outcomes. Despite having a fantastic wetting capability, the item is dehydrated. which is advantageous for storage. The overall powder organoleptic assessment characteristics, physical-chemical analysis, and tidying are among the evaluation parameters. It was discovered that the medicinal plants utilized to make the herbal shampoos were an abundant supply of innovative medications.

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