



A REVIEW: - ANTIDANDRUFF ACTIVITY OF SOME HERBAL PLANTS.

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ABSTRACT:

*This study aims to create and assess the safety and efficacy of natural herbal shampoos. It makes hair shine, strengthens it, gets rid of filth and dandruff, and encourages hair development. In the hair care sector, shampoo is most likely the biggest market. Given that shampoo is among the cosmetics utilized every day, a person's hair is a unique and appealing feature. Since chemicals make up the majority of the shampoo's constituents, using them has been highly discouraged due to the possibility of negative side effects. The primary objective is to acquire the knowledge of substituting natural elements for synthetic ones in anti-dandruff shampoos. Our goal is to create solutions that incorporate both natural ingredients and contemporary formulation techniques. This shampoo uses the extraction of orange peel extract powder (*Citrus Aurantium Dulcis* Rutaceae) (active ingredient), urry leaves (*Murraya Koenigii*-Rutaceae), ginger (*Zingiber Officinale* Zingiberaceae) in different proportions and Aloe (*Aloe Barbadensis* Miller Asphodelaceae), Reetha (*Soapberry* Mukorossi-Sapindaceae). Visibility, wet time, electrical equipment, visual pollution, foam, and foam stability have all been measured and analyzed extensively in exercise testing. The black-colored herbal shampoo offers good cleaning, low tension, detergency, pH, and cooling properties. These are all features sought in a good shampoo for daily use. But needs more research to check its effectiveness.*

Keywords: pH, natural components, herbal shampoo, hair, dandruff, cleaning action, and dirt removal

I. INTRODUCTION:

Asignificant aspect of human beauty is hair.

- Hair originates from the skin's dermis or hair follicle and is a protein thread.
- Hair is known scientifically as fimbria or pili.
- The skin system, which reaches the dermis layer, includes hair as an essential component.

It can be found at the root of the hair

- The main characteristic that sets animals apart as a separate class of entities is the hairy coat. People value it and perceive it as a sign of youth, class, and general health.
- It has a hearing function, can protect against cold and ultraviolet radiation, can have a great impact on the brain during development or bad hair patterns.

► At the microscopic level, changes in the length, color, diameter and overlap of individual hair can have a significant impact. Profiles of characteristics of different cultures and people^[1]

HAIR ANATOMY:

► The fatty layer of the scalp is where hair roots grow. The common misconception is that hair grows in a single strand, however hair follicles really produce hairs in groups called "follicular units" that can contain one to four hairs each.

► The hair eye, which houses the mechanism responsible for hair growth, is located at the base of every hair follicle. The dermal blood arteries supply nutrition to the hair follicles. The hair shaft is formed via cell division.

► The hair keeps its delicate structure as it develops further in the epidermis. Its layer becomes keratin as it moves closer to the skin, hardening.

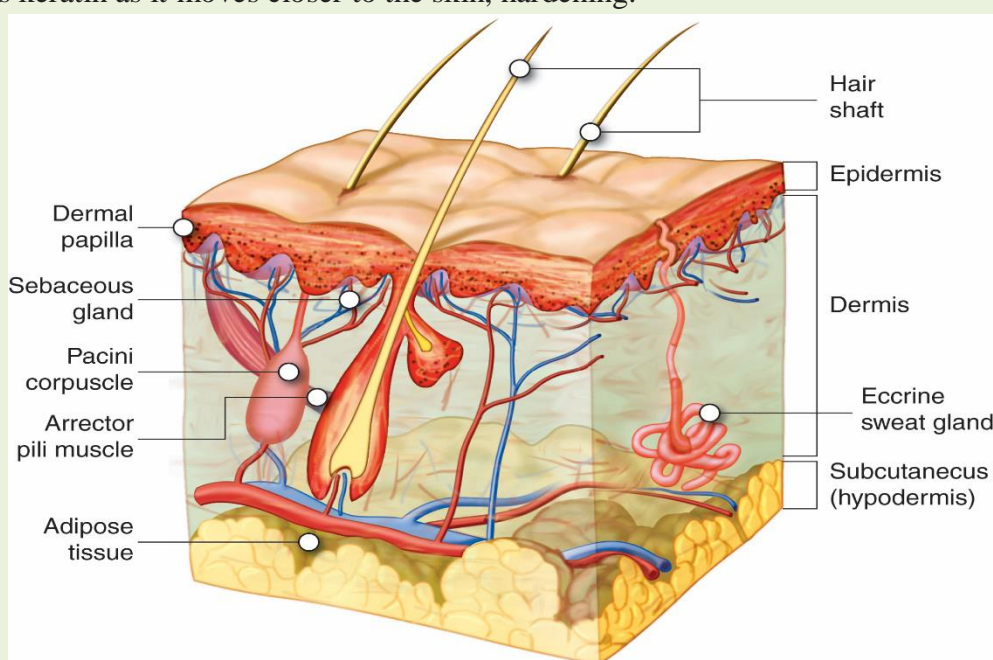


Fig No.1: -Parts of the Hair

Dermal papillae:

In addition to containing androgen receptors that are sensitive to DHT, dermal papillae are in charge of controlling hair growth and cycle.

► The matrix surrounds the dermal papilla and contains all of the active cells needed for hair development and the production of the many hair components, including the lateral root sheath, inner root sheath, and hair shaft. The dermal papilla and matrix combine to generate hair.^[2]

Outer root sheath:

The trichome, also known as the root layer, is the outermost keratinized portion of hair. After covering every hair follicle in the dermis, it transforms into the epidermis, enabling the hair follicle to open up from the inside out.

Inner root sheath:

The cuticle, Huxley's layer, and Henry's layer make up the three sections of the root. Capsule layers called the Henry and Huxley layers conflict with one another to stabilize the hair. The innermost layer of the hair shaft, known as the cuticle, is composed of hardened, dead cells that serve as an extra layer of defense for the hair shaft. This carries the hair and permits it to grow, together with the cystic layer that creates the Huxley and Henry layers.

Hair shaft: -

The hair shaft is an independent part of the hair follicle and is separated from the skin. The hair body consists of three layers Medullum, cortex and cuticle.

➤ Since it is not always present, the medulla is described as a safe and benign zone in the inner section of the hair shaft.

➤ Cortex, unlike the medulla, has a higher structure and organization. The cortex is made of keratin, which is responsible for giving the hair strength and durability as well as shine. The cortex also contains melanin and hair color is determined by the number, distribution and type of melanin granules present.

➤ The cuticle, which is linked to the root sheath, serves as the hair's protective coat. The hair's waterproof properties are aided by a complicated structure that includes a single-molecule lipid layer. **HAIR PHYSIOLOGY:**

➤ The majority of hair grows constantly during the anagen (growth phase). All hair will spend years in this stage.

➤ Anagen (transformation phase): Hair follicles shrink and hair growth slows down over a few weeks.

➤ Telogen (rest period): Old hair slips out of the hair follicle and hair growth ceases after a few months. The growth of new hair starts. Old hair is pushed out at this point.^[3]

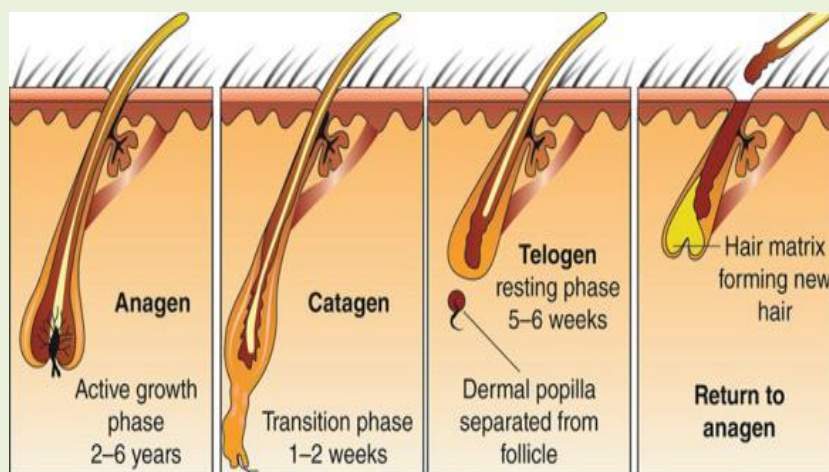


Fig No.2: -HAIR PHYSIOLOGY

Issues Associated with Hairs:

- Dandruff
- Drier hair
- broken ahairs.
- Oily hair
- Unruly hair
- Loose hair
- Hair loss
- Damaged due to Heat-related harm
- damaged vibrance
- gray hair

DANDRUFF:

➤ White patches of dead skin appear on the shoulders and hair due to this persistent, painless ailment that is brought on by an oily or dry scalp. This is a mild ailment that manifests as white flakes of dead skin on the shoulders or hair and a dry or greasy scalp.

➤ Even though it's harmless, dandruff can be embarrassing for those who have it, as it's a common occurrence. Dandruff causes skin cells to function more quickly than usual. The skin on the scalp may aggregate into white flakes when oil is present.

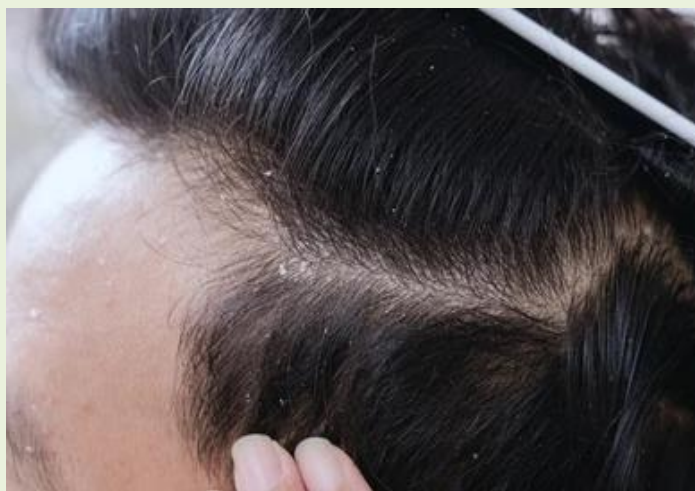


Fig No.3:- DANDRUFF:

CLASSIFICATION OF DANDRUFF:

A. Oily Dry dandruff:

This disease, also called pityriasis simplex, is characterized by the accumulation of extremely small flakes in the scalp area.

This type of dandruff does not affect the hair much. No visible skin pains. Starting in the middle of the head, the scales eventually extend to the ocular, parietal, frontal regions. ^[4]

B. Dandruff:

It's also known as seborrheic dermatitis or greasy dandruff. Through the creation of sebum, it reaches the scalp. After puberty, it is typically observed in young men. There are yellow, greasy flakes on the scalp and varying degrees of irritation. In this situation, hair loss is common. The scalp, armpits, breastbone, and behind the ears are the area's most commonly afflicted by this kind of dandruff.

CAUSES OF DANDRUFF:

- Dry skin.
- Irritation and oily skin.
- Washing the hair is not sufficient
- another skin disorders:
 - A. Eczema
 - B. Psoriasis
 - C. Seborrheic dermatitis
- Malassezia
- Dermatitis, or Product sensitivity related to hair care.

MEDICAL CARE: -

- Maintain a nutritious diet.
- Don't panic.

- The shampoo uses a special combination of ingredients to control dandruff.

SHAMPOO:

Shampoos are composed of prepared surfactants (liquid, solid, or powder) that, when applied according to the recommended guidelines, remove

- oil edges on the surface
- Grime.
- skin residue originates on the scalp from the hair roots and has no effect on the user^[5]

CLASSIFICATION OF SHAMPOO:

1. Based on Appearance

1. Powder Shampoo
2. Liquid Shampoo or Lotion Shampoo
3. Gel Shampoo or Solid Shampoo
4. Paste Shampoo
5. Oily Shampoo Essence
6. Various Anti-Dandruff Shampoo or Medicated Shampoo

2. Based on Use or Function:

1. shampoo for conditioning
2. Shampoo for preventing hair loss
3. medicinal shampoo
4. infant shampoo
5. Shampoo for balance
6. Shampoo for clarity

3. Based on origin:

1. Shampoo made with herbs
2. Shampoo made from eggs

Shampoo analysis entails quality control procedures, such as visual inspections and physical assessments of parameters like density, pH, and viscosity.[6]

ADVANTAGES OF SHAMPOO:

- Cleanliness
- Improve hair hygiene.
- Treats dry scalp
- Treats dry scalp
- Treats hair loss.
- Care for greasy or greasy hair.
- Reduce irritability and itching.
- fixes broken hairs.
- Shampoo the hair until it has a smooth, silky texture.
- Make your hair flourish and become lovely.

BEST CHARACTERISTICS FOR SHAMPOO:

- Gives hair a glossy, soft finish.

- More foam
- It does not harm the scalp, skin and eyes.
- Soil must be removed thoroughly and properly.
- Feels good
- Good biodegradability
- Low toxicity
- It is not strongly acidic (pH less than 7), because the alkaline environment will destroy the disulfide in the keratin bonds of the hair., thus weakening the hair

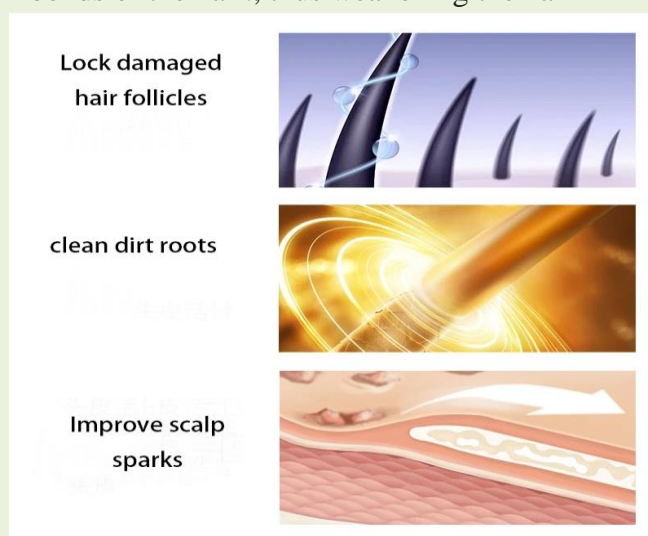


Fig No.4:- Best characteristics for shampoo

TYPES OF SHAMPOO:

1. Powdered shampoo: It is made from dry soap and is available as a dry powder. However, these days, dry synthetic detergents are utilized to make it. Water or other solvents are added to shampoo powder to prepare it.[7]to reduce the effect of the ingredients, especially the shampoo. Nowadays, these shampoos are no longer used due to difficulties in use.

2. Shampoo in liquid form: These are the most commonly used clear liquid formulations. Most are made of detergent-free air. We'll showcase a few of these shampoos.

3. whipped shampoo: Better than pure liquid whipped shampoo, these are referred to as lotion shampoos. Other sunscreens are also dissolved using solubilizers like magnesium stearate.

4. Shampoo with jelly: Typically, cellulose or another gelling ingredient is added to create its thick, translucent consistency. In barbershops and hair salons, it is easily utilized. The primary component is hand antiseptic, which can be applied either by itself or in conjunction with soap. Gel of the desired consistency can be obtained by changing the detergent ratio.

Adding methylcellulose to clarify the shampoo and then thickening it also creates the shampoo.

5. Aerosol shampoo: The reason these shampoos are termed aerosols is that they are packaged in aerosol cans. Because propellant is added, it requires complicated formulation, processing, and packing. The addition of propellants should be consistent and should not reduce the effectiveness of the shampoo. The open box is equipped with a valve. When the valve is pressed, the shampoo appears in the form of foam. Therefore, it is also called foaming shampoo [8]

6. Keratin-based shampoo: You'll enjoy the benefits of nourishing and conditioning hair if you use keratin oil to enhance any hair care product, such as shampoo, this gives the hair a smooth, glossy appearance. Additionally, it aids in preventing frizz, flyaways, and damage from blow dryers and other styling appliances.

7. Volumizing shampoo: Shampoo that adds volume or bounciness to hair gives the appearance of fuller, fuller hair. Your hair's texture holds greater significance than its thickness. As an alternative, the volumizing shampoo ought to be sufficiently gentle as to avoid weighing your hair down and ultimately adding extra volume.

8. Specialized shampoo: Special shampoo for dandruff, dyed hair, people with gluten or wheat allergies, people who like to use organic products, babies and children ("less shampoo" less)

- A. Conditioner
- B. Anti-dandruff
- C. Children
- D. Two layers
- E. anti-hair

HERBAL SHAMPOO:

These cosmetics were used to wash the hair and scalp similarly to shampoo, but they also include ancient Ayurvedic medicine. They are employed to eliminate filth, oil, dandruff, pollutants from the environment, etc. [9]

PROFITS FROM HERBAL SHAMPOO:

- The Shampoo has no adverse effects and is manufactured entirely of organic components without the use of artificial additives or surfactants.
- Biodegradable and available in the world.
- Does not cause eye irritation.
- Cheap price, not too costly.
- Shampooing your hair on a regular basis can be beneficial.
- You can achieve the perfect oil by using shampoo.
- Produced with essential natural antibiotics, it shields our scalp and hair from the sun's intense UV rays, avoiding skin disorders.

INGREDIENTS' FUNCTIONS:

Orange peel:

Hesperidium, citrus family. Its antimicrobial qualities and high concentration of vital nutrients, like vitamin C, make it beneficial for treating dandruff and an itchy scalp. It will make you feel good and will add a pleasant scent to your crowning glory.^[10]



Fig No.5: - Orange peel:

REETHA:

Reetha, commonly referred to as a soapberry or Sapindaceae, is also known in Ayurveda as Arishtak. and "Soapberry plant" in our country. In addition to being used as a hair conditioner, it is well-known for its traditional medical benefits. It's an anti-aging shampoo with anti-inflammatory and antibacterial properties to help combat dandruff. is daily useable.^[11]



Fig No.6:- Reetha

HIBISCUS:

Hibiscus, a plant from the Malvaceae family, Hibiscus softens, nourishes, and facilitates better management of hair. It also helps follicle growth. Use hibiscus flower as the main component in your hair conditioner to get the advantages of hibiscus flower for your hair. Plant proteins and mucilage found in the flowers and leaves can help treat hair loss and dandruff.^[12]



Fig No.7: - Hibiscus

GINGER:

The antiseptic properties of the Zingiberaceae family help eradicate bacteria and fungi from the scalp, which helps treat dandruff. pH imbalances are among the primary causes of dandruff. Ginger enhances your scalp's pH balance, which in turn promotes hair development.^[13]



Fig No.8: - Ginger

CURRY LEAVES:

Curry leaves from the family Rutaceae help control dandruff. Using antibacterial treatments can help you have healthy hair and a clean scalp by reducing dandruff and itching. Curry leaves help reduce dandruff, encourage hair growth, and hydrate the scalp. Curry leaves contain a high concentration of cell boosters that cure dry hair follicles and hydrate the scalp, hence reducing the risk of dandruff, premature graying, and hair loss^[14]



Fig No.9: - Curry leaves

ALOE VERA:

symptoms such as itching. The antifungal Aloe vera, aloe vera also reduces inflammation, which may help patients relieve dandruff. Dandruff can be avoided with the antibacterial qualities of aloe vera. It encourages the development of hair and raises the pH of the scalp.



Fig No.10: - Aloe vera

COCONUT OIL:

Apply coconut oil to your scalp twice a week to get rid of dandruff and dandruff. However, regular use can make the skin oily and cause some skin irritations. Use once or twice a week until dandruff disappears.^[15]



Fig No.11: - Coconut oil

NEEM JUICE:

Neem is an excellent moisturizer. It contains vitamin E and fatty acids to keep your skin smooth and soft. It ensures that your scalp does not dry out and your skin does not become flaky. While reducing hair loss, it strengthens your hair follicles and provides healthy hair. Additionally, neem can also help you improve the quality of your hair and prevent hair loss and breakage.^[16]



Fig No.12: - Neem juice

BASIL LEAVES:

There are numerous causes of dandruff, one of them being dry scalp. Basil leaves are a simple remedy for dandruff. Because this herb has antibacterial qualities, massaging it onto your scalp will help maintain its health and stave off numerous hair issues.^[17]



Fig No.13: - Basil leaves

GARLIC:

Garlic pastes has anti-inflammatory qualities that help prevent dandruff and can help remove it from your scalp when applied to your hair. You can keep your pH balance with its assistance as well. After applying to your scalp and hair, shampoo and rinse.^[18]



Fig No.14: - Garlic

Home remedies to control dandruff:



Fig No.15:- Home remedies to control dandruff

Function of other chemicals:

- 1) **Glycerine:** Helps moisturize hair



Fig No.16: - Glycerine

2) **NACL:** Employed as a thickening agent

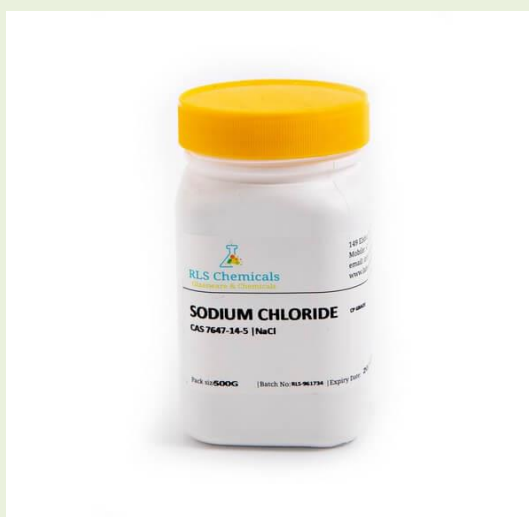


Fig No.17: -NACL

3) **Lemon juice:**

Lemon hair treatment can help fight dandruff, stimulate hair growth and strengthen hair.



Fig No.18:-Lemon juice

4)Gum (acacia): Better protection, cooling and protection of hair.



Fig No.19: - Gum (acacia)

5) Castor oil: It increases blood flow to the scalp, thus supporting healthy hair.



Fig No.20:- Castor oil

Tips to Reduce Dandruff:

Tips	Effectiveness
Stress Management	Stress can affect your health and affect your immune system, leading to dandruff.
Diet	Zinc, B vitamins and oil are necessary to get rid of dandruff.
Hair Routine	Use safe products that will not harm your hair or scalp, and massage your hair gently while washing it. If you have a scalp condition, wash your hair regularly.
Sunlight	Sunlight can help reduce dandruff, but don't spend too much time outside as it can cause UV damage. Use sunscreen on other parts of your body when you're outside.

FORMULATION OF HERBAL SHAMPOO: -

0.1 M NaCl was used to thicken the sample and create an SLS (7.5%) solution. Mix 20 ml of the herb with 20 ml of SLS solution and 20 ml of sodium chloride solution, gently shaking to combine. Add 10 ml gum arabic extract, 2 ml glycerol, and 25 ml water to bring the final amount down to 100 ml. Add just enough castor oil, the essential oil, to the center of the recipe to give it taste. In addition, 2 milliliters of lemon juice serve as a preservative and include vitamin E, which whitens and softens hair. Table 1: Herbal Shampoo Ingredients

Ingredient	Quantity
Plant-based extract	20ML
SLS	20ML
0.1 M NaCl	20ML
Gum (Acacia)	10ML
Glycerines	2ML
Capsules of vitamin E	2
Juice from lemons	2ML
Ricinus (castor oil)	q.s
Purified water	25ML

Material and methods Plant collection: -Herbal items such as gum, orange peel, Reetha fruit, and ginger root are gathered from nearby marketplaces. Curry leaves and aloe vera (leaves) were purchased from local nurseries. Wash with water to eliminate bacteria. Dry it in the sun, grind it into coarse powder and pass it through a 60-mesh sieve. The extract is prepared by boiling and the prepared extract is stored in an airtight container^[19]

PREPARATION OF HERBAL EXTRACTS:

Put 100ml of water in a stainless-steel tube and mix 5g of curry leaf powder, 5g of ginger juice, 10g of aloe vera gel, 20g of Reetha, and 5g of orange peel powder (Table 2). The mixture should be boiled until it turns to water.

Table 2:Herbal extract ingredientsingredients: -

Plants	Parts	Quantity for 100 mg
Curry leaves	Leaves	5gm
Adrak	Root	5gm
Powdered orange peel	Peel	20gm
Indian soapberry (Reetha)	Fruit	10gm
Rose mallow	Leaves	5gm
Indian Aloe	Leaves	10gm

An assessment of herbal soap:

Routine methods for visual and quality control are used to analyze the preparation process, as well as physical control such as density and pH for tension, bubble volume, viscosity and bubbling water time, and safety assessment.

Physical results/Visual Analysis:

Evaluate the transparency, color, odor and foaming ability and flowability performance of the preparation.

2. Determination of pH:

As we with distilled water, make a 10% v/v shampoo, then use a pH meter to determine the solution's pH.3. Determination of solid content percentage:

Use a dry, clean steaming bowl and fill it with 4 grams of shampoo. Put the shampoo-filled evaporation container on the hot plate and wait for the liquid to partially evaporate. After it dries, weigh the product in the shampoo.

4. Wetting time:

The amount of time needed for the diaper to completely dry was recorded in order to determine the wetting time. Cut 0.44 g heavy paper into 1-inch diameter disks. On the mock side (1% v/v), place the canvas disc and use a stopwatch to measure the time it takes for the paper to sink.

5. Rheological evaluation: -

An Ostwald viscometer can be used to determine the shampoo's viscosity. Counting the number of shampoos from the markdown allows one to determine the shampoo's viscosity.

6. Dirt dispersion:

In a wide-mouth jar with 10 ml of distilled water, add two drops of herbal shampoo. Shake the Falcon tube ten times, cap it, and add one drop of India ink. Light, medium, or heavy bubbles with around nil ink.

7. Cleansing action:

Application of the cleanser to unwashed hair for seven days was used to evaluate the cleanser's cleaning capabilities. This cleanser is utilized to wash oiled human hair 4-5 hours some time recently washing. The execution of the cleanser is measured by its capacity to evacuate oil from the scalp.

8. Surface tension measurement:

Measure with shampoo from the stone 'meter'. The rule is to degree the weight of a drop of cleanser falling from the glass capillary tube and in this way calculate the pressure of the fluid. Ready to decide the weight of water beads by calculating their weight. From here we will decide the surface pressure as appeared within the figure underneath.

- nl: Number of liquid drops
- nw: Number of water droplets
- dl: liquid density
- dw: water density
- tw: 71.2 dynes/cm

9. Foaming ability & foam stability:

The shake cylinder method is a useful tool for measuring foaming ability. Transfer 50 milliliters of 1% herbal shampoo into the graded 250 milliliter cylinder. Place your hand over the cylinder and shake for ten minutes. After shaking for 1 minute, collect the entire volume of the foam contents. Fill the foam container immediately after shaking for 10 minutes to 1 minute. The froth volume remains unaltered all through the complete handle of around 5 minutes; This indicates that the shampoo foam is stable and the shampoo preparation has more foam; This may be due to lack of soap.

10. Stability Study:

For four weeks, the formulation's stability was monitored by keeping the temperature between 25 and 30 °C.

11. Test for skin irritation: -

Use the appropriate shampoo on the skin for 5 minutes, then rinse and test for irritation or pain.

12. Conditioning attributes:

After washing your hair with shampoo, check the shampoo in your hair. Cooling capacity includes providing all services to the hair such as health, shine, softness and silkiness.

13. Microbial examination:

Mix 100 µl of shampoo with melted Mueller Hinton agar and pour aseptically into a sterile Petri dish. Move the plate and let it sit to mix thoroughly. After 24 hours at 37°C, the growth of microorganisms was monitored on the plates. The objective of this experiment is to ascertain the impact or resilience of microorganisms to the product using the methodology outlined by Cheesebrough. Test bacteria, both Gram-positive (*Bacillus*) and Gram-negative (*E. coli*), were subcultured in food broth and left to incubate at 37°C until the required turbidity was generated. Using a sterile applicator, tap the resultant culture onto Mueller Hinton agar and create four wells in the medium. To increase, fill the holes with 25, 50, 100

and 150 µl of shampoo. For twenty-four hours, the plates were incubated at 37°C. Use a ruler to measure the block area around the well

CONCLUSION:

The goal of the study is to eliminate synthetic ingredients that are frequently included in recipes to produce a sustainable and effective shampoo. It is well known that using synthetic shampoos can harm the hair cuticle, leaving it dry, lifeless, and brittle. Considering the percentage of synthetic ingredients this shampoo contains (7.5%), it is rather modest when compared to other synthetic shampoos available on the market. (10-40%).

Test results Our shampoo shows better cleansing, better foaming ability and faster soaking time. Aloe vera gel is used by us to offer cooling properties.

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