

"From Earth to Hair: Reviewing Herbal Shampoo Bar"

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ABSTRACT: The popularity of shampoo bars has grown in recent years as a result of their sustainability and environmental friendliness. These bars are frequently made with the use of surfactants, conditioning agents, and other chemicals. Due to the natural and secure qualities of herbal components, they have garnered more interest recently in the creation of shampoo bars.

The use of herbal and natural products for personal care has gained increasing popularity due to their potential benefits and minimal adverse effects compared to synthetic counterparts. In this article, an herbal shampoo bar which is enhanced with natural oils and botanical extract is formulated, and its effectiveness in nourishing and washing the hair is tested.

The goal of this review article is to give a thorough understanding of how herbal shampoo bars are made. The pros and cons of the various herbal substances used in shampoo bars are discussed in the article. The various formulation techniques are

Types of Shampoo

Shampoos can be classified based on texture and consistency, which can affect the performance and the user's experience. Here are some common types of shampoo based on texture and consistency:

1. **Liquid Shampoo:** - The most common type of shampoo is liquid shampoo, which has a liquid consistency and is easy to apply to the hair. It is typically made up of water, surfactants, and other ingredients that clean and condition the hair.
2. **Cream Shampoo:** - Cream shampoo has a thick, creamy texture that is ideal for people with dry or damaged hair. It usually contains moisturizing ingredients such as oils, proteins, or vitamins that nourish and hydrate the hair.
3. **Gel Shampoo:** - Gel shampoo has a thicker consistency than liquid shampoo but is not as

also covered, along with how they affect the qualities of the finished product.

Keywords: -Shampoo bar, Herbal Shampoo bar, Natural, Botanical Extracts, Formulation

I. INTRODUCTION:

Shampoo is a hair care product that is used to clean and remove dirt, oil, and styling products from the scalp and hair. It typically comes in liquid form and is applied to wet hair, lathered, and then rinsed out with water. Shampoos can be made with a variety of components, including surfactants, conditioning agents, scents, and preservatives, and can be designed for particular hair types, such as dry, oily, or color-treated hair. Other active compounds found in certain shampoos include salicylic acid, coal tar, or ketoconazole, which are intended to treat particular scalp disorders like dandruff or psoriasis.

creamy as cream shampoo. It is ideal for oily hair because it can help remove excess oil and impurities. Surfactants and conditioning agents such as polymers or silicones are commonly used.

4. **Powder Shampoo:** - Powder shampoo: Powder shampoo comes in a powder form and is activated by adding water to create a lather. It is ideal for people who travel frequently or who want an eco-friendlier option, as it often comes in a recyclable container. It typically contains ingredients like cornstarch or rice powder that absorb excess oil and impurities from the hair.
5. **Foam Shampoo:** - Foam shampoo is a newer type of shampoo that comes in a foam dispenser. It produces a rich lather that is luxurious and indulgent. It typically contains a combination of surfactants and foaming agents

like sodium lauryl sulfate or cocamidopropyl betaine.

6. **Dry Shampoo:** - Dry shampoo is a powder or aerosol spray that is applied to the hair directly to absorb excess oil and impurities. It is ideal for people with fine or thin hair and who want to extend the time between washes. It usually contains ingredients that absorb oil and dirt

from the hair, such as rice starch or kaolin clay.

7. **Herbal Shampoo:** - Herbal shampoo is a hair cleansing product that is made using natural ingredients such as plant extracts, essential oils, and herbs. It is often promoted as a healthier alternative to traditional shampoo due to its perceived benefits for hair and scalp health.

Sr. No.	Hair Type	Features
1	Normal	Normal hair has a smooth and even texture, without any signs of roughness or dryness. Has a natural shine, well-moisturized and balanced, without being too oily or too dry.
2	Dry	Dry hair can feel rough, coarse, or brittle to the touch, and may be difficult to comb or style. Lacks moisture and natural oils, and may appear dull, frizzy, or flyaway. Have reduced elasticity, which means it may be prone to breaking, splitting, or tangling.
3	Oily	Oily hair can feel greasy, slick, or heavy to the touch, and may appear limp or lifeless. Has an overproduction of natural oils, which can make the hair appear shiny or greasy. May have reduced elasticity, due to the weight of the excess oil, which can cause it to break or become brittle. Feel thicker than usual, due to the excess oil on the scalp and hair.
4	Combination	Combination hair may have varying textures, with some areas feeling dry or brittle and other areas feeling greasy or slick. Has an uneven distribution of natural oils, with some areas being overproduced and others being underproduced. Have both shiny and dull areas, depending on the amount of oil present. Have varying thicknesses, with some areas feeling thin and others feeling thick. Accompanied by a scalp that is both oily and dry, with some areas prone to acne or other skin irritations.

Table 1- Hair types and their features

Sr. No.	Hair Problems	Features
1	Hair loss or thinning	Can be caused by genetics, aging, hormonal changes, stress, certain medications or medical conditions, and can result in thinning of hair or baldness.
2	Dandruff or scalp flaking	Can be caused by dryness, irritation, fungal infection or other medical conditions, and can result in white or yellow flakes on the scalp and hair.
3	Oily scalp or hair	Can be caused by overactive sebaceous glands, hormonal changes, stress or other factors, and can result in greasy, weighed down hair and an itchy scalp.
4	Dry or damaged hair	Can be caused by exposure to heat, chemicals, harsh products, sun exposure, and can result in brittle, rough, and dull hair.
5	Split ends	Can be caused by damage to the hair cuticle, friction, heat, and other factors, and can result in hair strands splitting at the ends.
6	Grey Hair	Loss of color pigmentation, which causes hair strands to appear gray, silver, or white. Gray hair may be more susceptible to dryness and damage due to a reduced amount of natural oils in the hair. As hair goes gray, it can also become thinner or finer in texture. Gray hair can be more prone to yellowing, due to environmental factors like exposure to pollutants, smoking, or excessive sun exposure.

Table 2- Hair problems and their features

[8]. General Composition of a Shampoo

1. **Surfactants:** -These are the primary cleaning agents in shampoo that aid in the removal of dirt and oil from the hair and scalp. Examples of common surfactants used in shampoos

include sodium lauryl sulfate, sodium laureth sulfate, and cocamidopropyl betaine.

2. **Conditioning agents:** - These ingredients help to smooth and detangle the hair, reducing frizz

and static. Examples of conditioning agents include silicone oils, cationic polymers, and hydrolyzed proteins.

3. **Thickeners:** -These ingredients contribute to the shampoo's distinctive texture and consistency. Examples of thickeners include sodium chloride, cocamide MEA, and carbomer.
4. **Preservatives:** - These are added to shampoo to prevent bacteria and other microorganisms from growing and spoiling the product or causing infections. Examples of preservatives used in shampoos include methylparaben, propylparaben, and phenoxyethanol.
5. **Fragrance:** - These are added to shampoos to provide a pleasant scent. Fragrances can be synthetic or natural and may include essential oils, floral extracts, or other ingredients.

Advantages of a Shampoo

Some of the advantages of shampoo are as follows:

1. Shampoos can help to remove dirt, sebum, and other contaminants from the hair and scalp, which can improve overall hair cleanliness and hygiene.
2. The use of conditioning agents in shampoos can help to improve the texture and manageability of the hair, making it easier to comb, style, and maintain.
3. Shampoos containing specific active ingredients, such as pyrithione zinc or ketoconazole, can help to treat and prevent conditions such as dandruff or seborrheic dermatitis by reducing the growth of fungi or bacteria on the scalp.
4. Some shampoos contain UV filters or antioxidants that can protect the hair and scalp from damage caused by exposure to sunlight, pollution, or other environmental factors.
5. Regular use of shampoo can help to maintain a healthy scalp environment by removing excess oil, dead skin cells, and other debris that can clog hair follicles and lead to conditions such as acne or folliculitis.

Disadvantages of a Shampoo

Some of the disadvantages of shampoo are as follows: -

1. The surfactants (detergents) in shampoos can remove sebum and other natural oils from the

hair and scalp, leading to dryness, irritation, and damage to the hair cuticle (the outermost layer of the hair shaft). This can make the hair more prone to breakage and split ends.

2. If not rinsed out thoroughly, shampoo can leave behind residue that can build up on the hair and scalp, leading to a greasy or weighed-down appearance. This can also make it more difficult for other hair care products, such as conditioners or styling products, to penetrate the hair and work effectively.
3. Some of the ingredients in shampoos, such as sulfates, parabens, and synthetic fragrances, have been linked to skin irritation and other adverse reactions in some people. In addition, some people may have allergies to specific ingredients in shampoos, such as cocamidopropyl betaine or methylisothiazolinone.
4. The production and disposal of shampoo can have negative environmental impacts, such as water pollution and greenhouse gas emissions. In addition, many shampoo bottles are made from plastic, which can contribute to plastic waste and take hundreds of years to decompose in landfills.
5. Some user may find that using shampoo too frequently can lead to over-cleansing of the scalp and hair, which can disrupt the natural balance of oils and microorganisms on the scalp and lead to issues such as dandruff or hair loss.

Herbal Shampoo

Herbal shampoo is a type of shampoo that contains natural plant extracts, essential oils, and other botanical ingredients. Herbal shampoos, as opposed to traditional shampoos, which frequently contain synthetic chemicals and harsh detergents, are designed to be gentler on the hair and scalp while still effectively removing dirt and oil. Depending on the herbs and ingredients used, herbal shampoos may also provide additional benefits such as moisturizing, strengthening, or stimulating hair growth. Aloe Vera, Neem, Reetha, Shikakai, and Almond oil are some common herbs and plant extracts found in herbal shampoos.

1. History of Herbal Shampoo

[7]. Herbal ingredients have been used for hair care since ancient times in many cultures around the world. Ayurvedic texts dating back to 5000 BC in India, for example, recommend the use of herbs such as shikakai, amla, and reetha as

natural hair cleansers. Traditionally, these plants were combined with other herbs to create a natural paste that was applied to the hair and scalp, providing gentle cleansing and conditioning.

Similarly, herbal extracts from plants such as ginseng, green tea, and honeysuckle have been used for centuries in China to promote healthy hair. Herbal remedies for hair loss and other hair and scalp conditions were frequently prescribed by traditional Chinese medicine practitioners.

European traders and colonisers brought their own hair care practices and products with them during the colonial era, many of which were based on synthetic ingredients. These products quickly became popular among colonized countries' middle and upper classes, resulting in a decline in the use of traditional herbal hair care methods.

However, there was a renewed interest in natural and holistic health practices, including the use of herbal remedies for hair care, in the 1960s and 1970s. The counterculture movement, as well as the rise of environmentalism and sustainability concerns, fueled this interest.

2. Advantages of Herbal Shampoo

[9]. Some advantages of herbal shampoo are as follows

1. **Gentle on hair and scalp:** Herbal shampoos are usually free from harsh chemicals such as sulfates and parabens, which can strip the hair and scalp of natural oils and cause damage. Instead, they contain natural ingredients that are gentle and soothing on the hair and scalp.
2. **Nourishing and moisturizing:** Herbal shampoos often contain natural ingredients such as aloe vera, coconut oil, and shea butter that are known to nourish and moisturize the hair, leaving it soft and shiny.
3. **Promotes hair growth:** Certain herbal ingredients like amla, bhringraj, and neem are known to promote hair growth and prevent hair fall. Herbal shampoos containing these ingredients may help improve hair thickness and volume.
4. **Environmentally friendly:** Herbal shampoos are often made using natural, biodegradable ingredients and packaged in eco-friendly materials, making them a more sustainable and environmentally friendly option compared to traditional shampoos.

3. Disadvantages of Herbal Shampoo

[10]. Some disadvantages of Herbal Shampoo are as follows: -

1. **Limited availability and higher cost:** Herbal shampoos may not be as widely available as traditional shampoos, and they may also come at a higher price point due to the cost of sourcing and processing natural ingredients.
2. **Inconsistent performance:** Due to the natural variability of plant-based ingredients, herbal shampoos may not always provide the same level of performance from batch to batch, which can be frustrating for consumers.
3. **Allergic reactions:** While herbal shampoos are generally considered safe and gentle, some individuals may still experience allergic reactions or skin irritation due to individual sensitivities to certain ingredients.
4. **Shorter shelf life:** Herbal shampoos may have a shorter shelf life compared to traditional shampoos, as natural ingredients are more susceptible to spoilage and degradation over time.

[11]. Herbal Shampoo Bar

An herbal shampoo bar is a solid form of shampoo made from natural ingredients and free from synthetic chemicals. It typically contains cleansing and nourishing plant-based oils and extracts such as coconut oil, shea butter, and a variety of herbs and botanicals. Like traditional liquid shampoo, the bar is lathered with water and massaged into the scalp and hair, yet there's no need for a plastic bottle or packaging. Herbal shampoo bars are frequently marketed as a more environmentally friendly and long-lasting alternative to traditional liquid shampoos.

Advantages of Herbal Shampoo bar

1. **Eco-friendly:** Herbal shampoo bars are environmentally friendly as they are made with natural ingredients and don't require plastic packaging, which reduces waste.
2. **Longer shelf-life:** Herbal shampoo bars have a longer shelf-life compared to liquid shampoos as they don't contain water, which reduces the risk of bacterial growth.
3. **Travel-friendly:** Herbal shampoo bars are compact and easy to carry, making them ideal for travel.
4. **Gentle on hair:** Herbal shampoo bars are gentle on the hair and scalp as they are made

with natural ingredients, and do not contain harsh chemicals like sulfates or parabens.

5. **Cost-effective:** Herbal shampoo bars can be more cost-effective compared to liquid shampoos as they last longer and require less product per use.

[12]. **Disadvantages of Herbal Shampoo Bar**

1. **Residue buildup:** Solid shampoo bars can leave behind residue on the hair and scalp if not rinsed properly, leading to a dull or greasy appearance.
2. **Hard water incompatibility:** Solid shampoo bars may not lather as well in hard water,

making it difficult to evenly distribute the product throughout the hair.

3. **Longer adjustment period:** It may take some time for hair to adjust to the use of solid shampoo bars, especially if previously used to liquid shampoos, which can lead to temporary hair texture changes.
4. **Difficulty in travel:** Solid shampoo bars can be difficult to pack and transport for travel, especially if not stored properly.
5. **Limited variety:** Solid shampoo bars may have a more limited range of formulations and fragrances available compared to liquid shampoos.

II. MATERIAL & METHOD

1. **Herbal plants used**

Sr.no	Common Name	Botanical Name	Parts used
1.	Shikakai	Acacia concinna	Fruit Pods
2.	Reetha	Sapindus Mukorossi	Seed
3.	Neem	Azadirachta indica	Leaves
4.	Tulsi	Ocimum sanctum	Leaves

Table 3

2. **General chemical used**

Sr.no	Chemical	Source
1.	Ethanol	Laboratory reagent
2.	Stearic Acid	Laboratory reagent
3.	Soft Paraffin	Laboratory reagent
4.	Orange Oil	Laboratory reagent

Table 4

3. **Formulation Table**

Sr.no	Ingredients	Quantity	Use
1.	Shikakai	2g	Cleansing agent
2.	Reetha	3g	Surfactant

3.	Neem	4g	Anti-bacterial
4.	Tulsi	1g	Anti-fungal & Anti-Oxidant
5.	Orange oil	q.s	Perfuming agent
6.	Soft paraffin	0.70g	Hardening agent
7.	Stearic Acid	1g	Hardening agent
8.	Ethanol	5ml	Solvent

Table 5

4. [13]. Formulation Procedure

a. Collection, identification and processing of plant:

From various mature plants, the leaves of *Azadiracta indica*, *Ocimum tenuiflorum*, seeds of *Sapindus mukorossi*, and pods of *Acacia concinna* were collected. For the studies, the leaves were ground up, dried in a hot air oven, and stored in airtight bottles.

b. Extraction:

The powders of *Azadiracta indica*, *Ocimum tenuiflorum*, *Sapindus mukorossi*, and *Acacia concinna* were extracted with water using a decoction method. In a conical flask, 9 gm of the above-mentioned powder was extracted with water for four hours with occasional agitation. Then it was filtered.

c. Formulation:

To obtain the herbal shampoo bar *Azadiracta indica* extract, *Ocimum sanctum*, *Sapindus mukorossi*, and *Acacia concinna* powder were added to a basic glycerin soap base formulation which contained 1 g of stearic acid and 0.70 g of soft paraffin. 1g of stearic acid, 0.70g of soft paraffin, and 5ml of ethanol were weighed. After melting glycerin basic soap, 1 g of stearic acid, 0.70 g of soft paraffin, and 5 ml of ethanol were added. The extract was added to the melted solution and stirred continuously for 30 minutes to make the mixture homogeneous. The partially solid mixture was poured into a mould and given time to set.

5. [14].Evaluation Tests

Some common evaluation tests for the formulated herbal shampoo bar are as follows:

1. **pH Test:** The pH of the shampoo bar should

be between 4.5 to 6.5. The pH is checked using a pH meter or pH strips.

2. **Lather Test:** The lather of the shampoo bar should be rich, creamy, and have good stability. The lather is tested by rubbing the bar between wet hands and observing the foam produced.

3. **Cleansing Test:** The shampoo bar should effectively clean the hair and scalp without leaving any residue. The cleansing ability is tested by observing the hair after washing and checking for any residual oil or dirt.

4. **Organoleptic Evaluation parameters:** These include physical testing parameters such as odor, colour, appearance & texture.

The formulated herbal soap was evaluated for the following parameters:

1. Organoleptic evaluation:

i. **Color:** - Brown

ii. **Odor:** -Orange

iii **Appearance:** - Good

2. Physical evaluation:

a) **pH:** - the pH was determined by using pH paper & the pH was found out to be basic in nature

b) **Foam retention:** - 25 mL of the 1% soap solution was placed in a 100 mL graduated measuring cylinder, which was covered with a hand and shaken 10 times. The volume of foam was measured at 1 minute intervals for 4 minutes and found to be 5 minutes.

c) **Foam height:** Foam height was found to be 10 cm

d) **Antimicrobial test:** - Various studies on the

antimicrobial activity of neem have been conducted, and thus according to a research paper by antimicrobial activity of *Azadiricta indica* leaf, bark, and seed extract.

III. CONCLUSION:

According to previous research on the antimicrobial activity of Neem, the plant *Azadiricta India*, *Ocimum sanctum*, *Sapindus mukorossi*, and *Acacia concinna* were extracted using water and subjected to various evaluation tests, and the prepared formulation when tested for different tests gave good results. When tested on a few volunteers, it did not cause any side effects to the hair, proving that soap does not cause any side effects to the hair. Furthermore, the prepared soap was standardized by evaluating various physicochemical properties such as pH, appearance, and odour, all of which were satisfactory.

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