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Review Article

Herbal Soaps: A Natural Alternative for Skin Care

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ABSTRACT

Chemicals that might damage skin are included in the majority of commercial soaps and detergents. An excellent substitute is to use natural herbal soap and detergents. They promote relaxation and stress relief. The creation of an herbal soap using plant extracts is urgently needed because chemical-based soaps contain harsh chemicals that can harm skin. Certain plants are suitable for use in any herbal soap due to their recognized antibacterial, anti-inflammatory, anti-scar, anti-spot, anti-acne, and anti-wrinkle effects. Using neem, tulsi, green moong dal, coffee, green tea, sugar, cocoa powder, and other primary components, five distinct soap compositions were created for the current study based on the various skin types. Color, odor, texture, pH, moisture content, foam formation and form retention capability, antibacterial activity, skin irritation, and other assessment criteria were assessed for the manufactured soap compositions. The soap produced the best results and was deemed safe for eating when the results were compared to the standard.

INTRODUCTION

A variety of natural components obtained from different plants and herbs are used to make herbal soap. Herbal soap is frequently made with herbs including chamomile, lavender, mint, and rosemary. These herbs offer many therapeutic advantages for the skin since they are high in vitamins, minerals, and essential oils. People with dry or sensitive skin frequently choose herbal soap because of its well-known calming, revitalizing, and healing qualities. Many cosmetic goods on the market today are contaminated, and many other beauty preparations are of low quality, which increases the risk of adverse consequences including skin rashes, allergic responses, and even the emergence of skin illnesses. In essence, plant components including seeds, rhizomes, and roots are used to make herbal soaps. It possesses antiseptic, antioxidant, antibacterial, and anti-aging properties. The synthetic hues, flavors, fluorides, and other ingredients commonly found in commercial soap are absent from herbal soap

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[9]. The vast majority of people are unaware of the long-term consequences of using commercial soaps. Certain compounds included in commercial items are considered harmful and have the potential to cause long-term damage to the body (Aiello et al., 2007). The purpose of the herbs and essential oils included in the herbal product should not be to penetrate the skin's outermost layer. Extracts can reduce oxidative stress in the skin, which has been linked to postponing the aging process, when added to topical preparations. Extracts can reduce oxidative stress in the skin, which has been linked to postponing the aging process, when added to topical preparations. They are safe to use and less prone to allergies. The synthetic hues, Flavors, fluorides, and other ingredients found in commercial soap are absent from herbal soap. Because they utilize the power of natural herbs, which are frequently used to cure a variety of illnesses and skin disorders, herbal soaps have substantial therapeutic benefit. Compatibility, accessibility, cost, and value. The demand for herbal cosmetics is rising quickly on a global scale, highlighting the invaluable gifts that Mother Nature has given us. Because herbal soap formulations contain antibacterial and antifungal ingredients, they are considered medications or pharmaceuticals. They frequently use plant components, such as leaves, roots, stems, and fruit, to treat wounds, ward off illness, or advance well-being. Among the many benefits of soap are its long-lasting scent and effective moisturizing properties. Including herbal soap in your skincare regimen is a safe, natural way to take care of your skin. Numerous advantages are provided by this fantastic product, which results in a complexion that is healthy and glowing. In addition to treating skin diseases like ringworm, it also helps your skin become smoother, more evenly toned, and more delicate overall. Because they hinder the skin's normal regeneration process, clog pores, restrict cell respiration, and hasten skin aging, chemicals included in soaps can cause dry skin, skin damage, and skin allergies. Certain plants give products their natural colour, while others help people cope with stress. Numerous vital vitamins and minerals found in some plants have significant positive effects on human health [1]. In general, a soap is a mixture of fatty acid salts used to clean the body. Saponification is the process by which triglyceride fats hydrolyse into fatty acids, which then react with alkali to generate soap. One issue, though, is that these chemically produced soaps include dangerous ingredients like plastic, aluminium, phenol, mercury, and other chemicals that are extremely harsh on the skin and can lead to a number of issues when used topically. The creation of a herbal product with few adverse effects is made possible by the fact that these chemicals, once absorbed via the skin, can injure other organs of the body. In India, employing herbal medicine to treat illnesses has been a popular practice since ancient times [2]. Around 2800 B.C., the Babylonians created soap. They found that mixing wood ash with fats specifically, animal fats created a material that was simpler to clean. Wool used in the textile business was washed with the first soap [3]. The body's biggest and most delicate organ is the skin. It collects sensory information from the environment and acts as a barrier to safeguard the body's organs. It also contributes to maintaining a healthy body temperature itself. The skin may develop a variety of unique cells and structures. The three main layers are the epidermis, dermis, and hypodermis. Every layer makes a distinct contribution to the overall function of the skin. We must prevent skin illnesses and imbalances since the skin plays a specific role in our overall health. Skin disorders are a common medical disease. It affects individuals at all ages, from infants to the elderly, and does so in a variety of ways. Skin problems can be caused by infections, allergies, sun exposure, trauma, and other things. People have

used medicinal plants as a kind of treatment from the beginning of time [4]. It's critical that all medical practitioners understand the fundamentals of human skin structure and function. Another name for skin is cutaneous membrane. The skin's surface area in adults ranges from 1.2 to 2.2 meters. There are two types of skin: hair-bearing skin, which covers a large portion of the body, and hairless skin, which is found on the palms of the hands and soles of the feet. The skin serves as the body's primary barrier against pathogens and is the area most exposed to sunlight and environmental pollutants [5].

Skin types:

1) Normal skin
2) Oily skin
3) Combination skin
4) Sensitive skin.

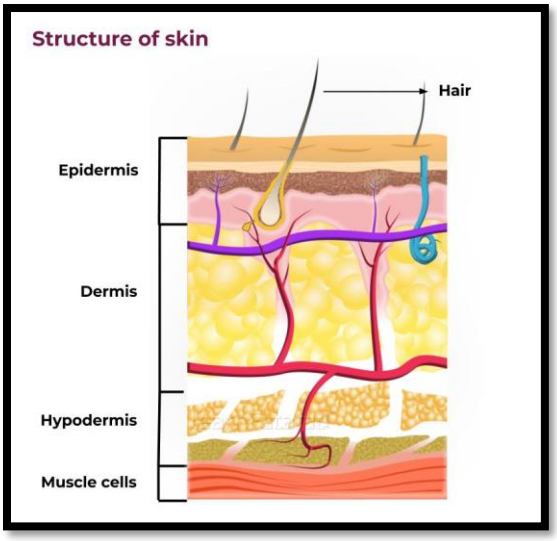

Figure No.1 Structure of skin

Functions of skin

It acts as a barrier to keep out heat, light, wounds, and infections. Additionally, the skin

- Controls body temperature
- stores fat and water
- acts as a barrier between the body and its surroundings
- stops bacterial invasion
- stops water loss
- aids in the production of vitamin D when exposed to sunlight [4].

Types of Soaps [4]

Table No. 1 Types of Soaps

Laundry soaps	Cleaning soaps
Personal soaps	Novelty soaps
Perfumed soaps	Beauty soaps
Guest soaps	Medicated (or) Herbal soaps
Glycerine soaps	Transparent soaps

Classification Of Herbal/ Medicated Soaps [6]

1) Based on the form of Soap

Example: Handmade soaps, Bar soaps, Liquid soaps

2) Based on the usage of Soap

Example: Toilet soap, non-toilet soap, Glycerine soap, Transparent soap

3) Based on the ingredients of Soap

Example: Milk Soap, Animal Soap, Luxury Soap, Perfume

Advantages Of Herbal Soaps

1) Herbal soaps don't contain parabens or sulphates.
2) Made with natural components.
3) The soap is handmade.
4) It addresses skin issues.
5) No colouring agents are used to herbal soaps.
6) Animals are not used in the testing of herbal soap.
7) The skin is nourished and moisturized with herbal soap [4].

Disadvantages Of Herbal Soaps

After reading about all the advantages of organic soap, it's difficult to think of a drawback.

1) Some people may experience problems with organic soaps because they contain essential oils to which they are allergic.
2) Depending on the individual, this may result in a variety of reactions [4].

Limitations Of Herbal Soaps

1) They might not be as good at eliminating germs as store-bought soaps.
2) They might not produce as much lather as store-bought soaps.
3) They might not last as long as store-bought soaps.
4) They might not be as reasonably priced as store-bought soaps [4].

Functions Of Herbal Soaps

1) Without depleting the skin's natural oils, it must efficiently wash the skin by eliminating debris, oil, and pollutants.
2) Guard against stress, chemicals, and allergies.
3) It ought to produce enough foam to satisfy the user.
4) Encourage skin nourishment, combat body odor, and revitalize the skin.
5) To treat a range of epidermal disorders, including acne, psoriasis, and eczema [7].

Common Herbs Used in Herbal Soaps

Table No. 2 Common Herbs

Sr no	Name of Herbs	Information	Images
1	Turmeric [8]	**Biological name:** Curcuma longa **Common name:** Haldi **Part typically used:** Root **Uses:** 1) It is used outwardly for skin injuries and minor sores, Ringworm wounds, and especially athletes' foot. 2) Luminous skin. Increases healing. 3) Aids in treating psoriasis. 4) Appearance of acne scars, could cure scabies. Other skin disorders might benefit.	 **Fig No 2 Turmeric**
2	Neem [8]	**Botanical name:** Azadiracta indica. **Part typically used:** Leave. **Colour:** Green. **Constituents:** Flavonoids, Alkaloids, Azadirone, Nimbin, Nimbidin, Terpenoids, Steroids, Margosicacid, Vanilic acid, Glycosides, BKaempeerol, Quercursertin are present in neem leaf. **Uses:** Treat dry skin and wrinkles, Heal wounds, Treat acne, minimize moles, stimulate	 **Fig No. 3 Neem**

		collagen production, reduce Scars.	
3	Tulsi [3]	**Synonyms:** Ocimum tenuiflorum. **Biological source:** Fresh and dried leaves of Ocimum species like Ocimum sanctum. **Family:** Lamiaceae **Part use:** Leaf **Chemical constituents:** Eugenol germacrceterpens. **Application:** Basil (Tulsi) imparts lustre to dull skin and leaves the skin toned, protected, and smoother with every wash. It also treats acne and other skin infections.	 **Fig No. 4 Tulsi**
4	Shikekai [3]	**Synonyms:** Acacia concinna **Biological source:** It consist the fruits of plant acacia concinna lin. **Family:** Fabaceae **Part use:** Leaves and pods **Chemical constituent:** Lupeol, spinasterol, acacic acid, lactone, and the natural sugars glucose **Application:** Shikakai is a potent herb and is beneficial for the skin.	 **Fig No. 5 Shikekai**
5	Aloe [7]	**Synonym:** Aloe Botanical **Name:** Aloe barbedensis miller. **Part Used:** Leaves **Colour:** Green colour **Uses:** It is used for getting a smoothening effect on the skin. It nourishes the skin to improve the normal function. It hydrates the skin to get a cooling effect. Also, it has antiseptic properties.	 **Fig No. 6 Aloe**
6	Coconut Oil [7]	**Botanical Name:** Cocos nucifera **Parts used:** Fruit **Colour:** Clear or light-yellow colour **Uses:** Virgin coconut oil has the activity to fight against eczema and acne, it slows down the skin aging, promote the moisture content of skin. It has the property to form a good lather in the preparation of soap.	 **Fig No. 7 Coconut oil**

Composition Of Herbal Soaps

A variety of natural substances that provide different skin advantages are used to make herbal soaps. These are some typical elements included in herbal soaps; however, the exact composition might change according on the brand and the desired qualities.

- **Base oils:** Usually, a variety of base oils, including castor, coconut, palm, and olive oils, are combined to make herbal soaps. These oils assist to produce a thick lather and have hydrating qualities.
- **Essential oils:** Essential oils are extracted from a variety of plants and are used to provide aroma and medicinal properties to herbal soaps. Examples include eucalyptus oil for its calming effects, tea tree oil for its antimicrobial qualities, and lavender oil for relaxation.
- **Herbs or botanicals:** Because of their therapeutic or exfoliating qualities, dried herbs or botanicals are frequently included to herbal soaps. Calendula petals' anti-inflammatory qualities, chamomile flowers' calming effects, and oatmeal's mild exfoliating qualities are a few examples.
- **Natural colorants:** Certain herbal soaps could contain natural colorants made from minerals or plants, including activated charcoal for black, spirulina powder for green, or turmeric powder for yellow.
- **Additional ingredients:** Other components, such shea butter for increased hydration, aloe vera gel for calming, or honey for its moisturizing and antibacterial qualities, can be added to herbal soaps based on the desired qualities [1].

Preparation Of Herbal Soaps

Collection of the necessary ingredients: You'll need a good soap base, such shea butter or goat milk. Essential oils, dried herbs, and botanical powders are among the herbal substances that are gathered.

Melt the soap base: In a microwave or double boiler, melt the soap base after cutting it into small pieces. The soap base should be heated and smoothed out after stirring.

Addition of the herbs: After the soap base has melted, remove from the fire and whisk in the herbal components. They employ powders, essential oils, or dried plants. To guarantee that the herbs are dispersed evenly throughout the soap, add them gradually while stirring constantly.

Pour into Moulds: Pour the soap mixture into moulds once the herbs have been added. They utilize silicone melds or cooking spray-coated plastic containers. Give it hours or even overnight to cool and solidify.

Cut and store the soap: After the soap has completely cooled and solidified, take it out of the moulds and cut it into the appropriate sizes and shapes. Until it is time to use it, keep the soap somewhere dry and cold [1].

Evaluation Of Herbal Soaps

- Determination of Clarity, Colour and Odors
- Determination of pH
- Foam Height
- High-temperature stability
- Determination of % Free alkali
- Skin Irritancy Test
- Alcohol insoluble matter
- Foam Retention
- Dirt Dispersion
- Determination of Saponification Value
- Wetting Time
- Antimicrobial Test
- Moisture content

1) **Determination of Clarity, colour and Odor** [9]

Against a white background, the colour and clarity were examined with the naked eye, and the fragrance was detected.

2) **Determination of pH** [3]

A digital pH meter and pH paper were used to measure the pH of each manufactured mixture.

3) **Foam Height** [10]

25 millilitres of clean water were used to dissolve a 0.5-gram sample of soap. After adding water to create the volume 50 ml, pour it into a 100 ml measuring cylinder. The foam's height above the aqueous fluid was measured after 25 strokes were given while standing till the aqueous volume reached 50 ml.

4) **High temperature stability** [6]

Liquid soap is kept at 50˚C for a week. The stability of liquid soap will be monitored over this period. While samples exhibiting precipitation and crystal roughening were classified as unstable, those exhibiting homogeneity and stability in the liquid after standing were classified as stable.

5) **Determination of % Free alkali** [10]

Five grams of the manufactured soap are dissolved in fifty milliliters of neutralized alcohol. The mixture was refluxed for thirty minutes. Using phenolphthalein as an indicator, the mixture is titrated with 0.1 N HCl once it has cooled.

6) **Skin Irritancy Test** [11]

Mark a 2 square centimetre area on the right dorsal surface. Note what occurred to the hand after the herbal soap was applied to the right side at the designated location. Edema, erythema, and irritation were assessed at regular intervals for up to 24 hours before being reported.

7) **Alcohol insoluble matter** [12,15]

50ml of warm ethanol was applied to a conical flask containing a 5g sample of soap in order to dissolve it. After passing through tarred filter paper, the liquid was heated for an hour to 1050 degrees Celsius. The filter paper was no longer weighted.

8) **Foam Retention** [10]

The 1% soap solution was put in 25 ml to a 100 ml graduated measuring cylinder. were shook ten times with one hand holding the cylinder. Every minute for four minutes, the foam's volume was recorded.

9) **Dirt Dispersion** [13]

Two droplets of ink were added to the sample, which was collected in a straight glass jar, along with 1% of the sample solution. After that, the jar was shaken to allow the ink to settle and reveal any froth.

10) **Determination of Saponification Value** [13]

The process of saponification the average molecular weight of the fatty acids found in fat or oil is the value. To determine its value, 0.5 M KOH is applied to 2 grams of soap sample in a conical flask. On a hot water bath, the mixture is heated to around 550C while being constantly stirred. After raising the temperature to 1000C, boiling for an additional hour, and titrating against 0.5 M HCL using phenolphthalein as an indicator, the end-point was reached when the pink tint vanished. This is how the value is determined:

Saponification Value = Volume of KOHX 28.056/ Weight of Oil (gm)

11) **Wetting Time** [13]

After cutting a piece of cotton fabric into a 1-inch disc, the sample weight was calculated by measuring how long it took for the fabric to get wet. The sample is collected and stored on top of the sample in the following step. The fabric disc was let to float freely on the sample, and the wetting time the length of time it took for the fabric disc to sink after floating was meticulously noted.

12) **Antimicrobial Test** [13,14]

The dilution approach was used to evaluate the soap sample for antibacterial activity. Ciprofloxacin 5ug was utilized after 1 gm of soap was dissolved in 100 ml of distilled water at different sample concentrations, such as 5, 10, 20, and 50 mg/ml. The zone of inhibition was then computed after the plates were incubated for 24 hours at 37^0C.

13) **Moisture content** [12]

After being carefully weighed, a little more than 5g of the material under study was transferred to a tarred porcelain dish of known weight and baked in a hot air oven for two hours to 105°C. The sample and the tarred China dish were weighed together to ascertain the dish's actual weight. The weight of the material was noted in order to calculate the percentage moisture content.

Moisture content = (Difference in weight/ initial weight) × 100

CONCLUSION

Herbal soaps significantly improve the skin's suppleness, softness, and smoothness. Chemical soaps, on the other hand, are loaded with harmful ingredients that can be bad for your health and skin. Herbal soaps are the best option for improved skin care and the best possible health results because of their many advantages.

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