

# Preparation and Evaluation of Herbal Soap from Licorice Root Powder

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## Abstract

The present study focuses on the formulation and evaluation of an herbal soap incorporating natural ingredients known for their therapeutic and cosmetic benefits. The herbal components used include licorice root powder, neem powder, aloe vera gel, jojoba oil, sandalwood powder, rose water, and orange oil, combined with a glycerin soap base. These ingredients were selected based on their antibacterial, anti-inflammatory, moisturizing, and skin-soothing properties. The soap was prepared using a melt-and-pour technique, ensuring minimal degradation of active constituents. The formulated soap was evaluated for various parameters such as pH, foamability, cleansing action, hardness, skin irritation, and stability. The results indicated that the herbal soap maintained a skin-friendly pH, provided good cleansing action, and showed no signs of skin irritation, making it suitable for daily use. This study highlights the potential of natural ingredients in creating effective and skin-safe cosmetic products.

**Keyword:** Herbal soap, licorice root powder, neem powder, aloe vera, jojoba oil, sandalwood powder, rose water, orange oil and soap base.

## Introduction

Herbal cosmetics have gained considerable attention in recent years due to the growing consumer preference for natural and chemical-free products. Among these, herbal soaps are widely accepted for their therapeutic benefits, skin compatibility, and minimal side effects. The incorporation of plant-derived ingredients such as Licorice root powder (*Glycyrrhiza glabra*), Neem powder (*Azadirachta indica*), Aloe vera gel (*Aloe barbadensis*), Jojoba oil (*Simmondsia chinensis*), Sandalwood powder (*Santalum album*), Rose water, and Orange oil (*Citrus sinensis*) provides multifunctional skincare properties including antimicrobial, anti-inflammatory, moisturizing, and skin-brightening effects. (1)

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provides multifunctional skincare properties including antimicrobial, anti-inflammatory, moisturizing, and skin-brightening effects. (2)

To evaluate the effectiveness of the soap through microbial studies, skin sensitivity testing (if applicable), and user feedback.

Licorice root is well known for its skin-lightening and anti-inflammatory properties due to the presence of glabridin and liquiritin. (3)

Neem is a potent antimicrobial and antifungal agent, widely used in Ayurveda for treating skin infections.

Aloe vera soothes and hydrates the skin, promoting healing and regeneration.

Jojoba oil mimics skin's natural sebum, helping to maintain moisture balance.(4)

Sandalwood powder imparts a natural fragrance and has a cooling, antiseptic effect on the skin.

Rose water acts as a natural toner and anti-inflammatory agent.

Orange oil has antioxidant and antimicrobial properties, contributing to freshness and improved skin tone. (5)

Aloe Vera is now most frequently used in the cosmetology industry(6) According to definition, soap is a chemical compound combination produced when a metal radical interacts with a fatty acid. Any salt of those fatty acids that is water soluble and has eight or more carbon atoms is referred to be soap. The metals commonly used in soap making are sodium and potassium, which produce water laundry and cleaning products that are soluble in soap.(7).

To provide the best skin care solution for your skin, several natural soap producers additionally employ aromatherapy and herbal remedies. Herbal soaps, which are made entirely of natural materials and uncommon herbs, are proven to be very good for the skin. (8) These soaps' contained herbs have medicinal and restorative properties that provide particular advantages to the skin, including strength, sustenance, healing, and hydrating. Additionally, these soaps include vitamin E, aloe vera, super fatty oils, and related essential oils. to the goodness of skin and overall health Herbal soaps work well for treating a variety of skin issues. Additionally, glycerine—which is typically not used in commercial soaps—is included in these soaps.(9)

These soaps are suitable for dry skin problems since glycerine helps to keep the moisture in the skin. Preparations of herbal soap are medications or pharmaceuticals that contain antimicrobial and anti-fungal agents which mainly uses parts of plants such as like leaves, stem, roots & fruits for treatment for an injury or disease or to achieve good health.

Herbal pharmaceuticals are in more demand than their synthetic counterparts for a variety of reasons, including the following

- Minimal Adverse Effects.
- Enhanced safety and effectiveness.
- Easily accessible.
- Improved compatibility with other ingredients.
- Increased tolerability for all skin tones.(10)

### **Use of soap:**

Cure for acne Neem's antibacterial qualities kill acne-causing germs, aiding in acne treatment and prevention. Treats whiteheads and blackheads. Aloe Vera exhibits moisturizing properties and moisturizes skin without making it feel oily. Therefore, it is ideal for those who have oily skin.

Therefore, it is ideal for those with oily skin. It also combats acne and sunburn. The primary use of this soap is for any skin issue.

### **Types of skin and skin-related problems of users of soap:**

#### **A. Skin-related problems:**

Soap is said to have a high alkaline content when it contains a lot of un-saponified lye, which can irritate skin. This is particularly true for little children and other people with delicate skin. Conventional soaps include irritants that can disrupt the delicate pH balance that your skin, both on your face and body, maintains and result in dry skin, contact dermatitis, and inflammatory acne.

#### **B. Dryness:**

Lack of moisture tight, disagreeable, and occasionally even painful skin feels as good to the touch as it appears. Harsh cleaners can irritate and dry up the skin by eliminating its natural oils. The proteins and lipids that surfactants in cleansers break down can result in skin tightness, irritation, dryness, and barrier disintegration. According to a study published in Dermatologic Therapy, washing can result in damage.

#### **C. An inflammatory form of acne:**

It may seem counterintuitive, but the cleanser you use to clear the pores of your face of oil and debris may be the root cause of the acne you're trying to avoid or cure. Harsh detergents with a higher pH can damage the acid mantle's natural antibacterial disinfection.

A study that was published in Skin Pharmacology and Physiology claims that it both causes and defends acne vulgaris, among other conditions.(13)

## MATERIAL AND METHOD

The present research paper deals with the preparation and evaluation of herbal soap for acne treatment by using natural ingredients i.e. Licorice root powder, Neem powder, Sandalwood powder, Aloe vera gel, Rose water, orange oil, vitamin E and Soap base. All the ingredients authenticated at Pharmacognosy department of Nandkumar Shinde College of Pharmacy, Vaijapur. The details of ingredients used to formulate digestive powder is given below:

### 1. Licorice root powder:



**Fig. 1: Licorice root powder**

- **Synonym:** Glycyrrhiza hirsute, Glycyrrhiza pallida
- **Family:** Fabaceae
- **Chemical constituent:** Glycyrrhizin, Flavonoids, Isoflavone
- **Use:** Employed in skin-lightening and anti-aging products due to its antioxidant properties(11,12).

### 2. Neem powder:



**Fig. 2: Neem powder**

- **Synonym:** Margosa
- **Family:** Melioideae
- **Chemical constituent:** Cyclic trisulphide and cyclic tetrasulphide
- **Use:** Neem is widely used for skin care due to its antibacterial, antifungal, anti-inflammatory, and antioxidant properties.(13)

### 3. Sandalwood powder:



**Fig. 3: Sandalwood powder**

- **Synonym:** Chandana, kalabham
- **Family:** Santalaceae
- **Chemical Constituents:** Sesquiterpenes and sesquiterpenols, with  $\alpha$ -santalol and  $\beta$ -santalol.
- **Use:** sandalwood powder and essential oil are used in skincare for their anti-inflammatory, antibacterial, and antioxidant properties.(14)

### 4. Aloe vera gel:



**Fig. 4: Aloe vera gel**

- **Synonym:** Aloe barbadensis
- **Family:** liliaceae
- **Chemical constituents:** bradykinase, peroxidase, mineral
- **Use:** wound healing, reducing inflammation, and promoting skin cell regeneration.(15)

## 5. Rose water:



**Fig. 5: Rose water**

- **Synonym:** Attar rose.
- **Family:** Rosaceae.
- **Chemical constituents:** Citronellol, linalool.
- **Use:** Flavoring agent.(16)

## 6. Orange oil:



**Fig. 6: Orange oil**

- **Synonym:** Beardless
- **Family:** Rutaceae
- **Chemical constituents:** D-limonene
- **Use:** Treat skin conditions such as acne.

## 7. Vitamin E:



**Fig. 7: Vitamin E**

- **Use:** World Journal of Pharmaceutical Research Capsule Use-helps maintain healthy skin and eyes and strengthen the body's natural defense against illness and infection.

## 8. Soap Base:



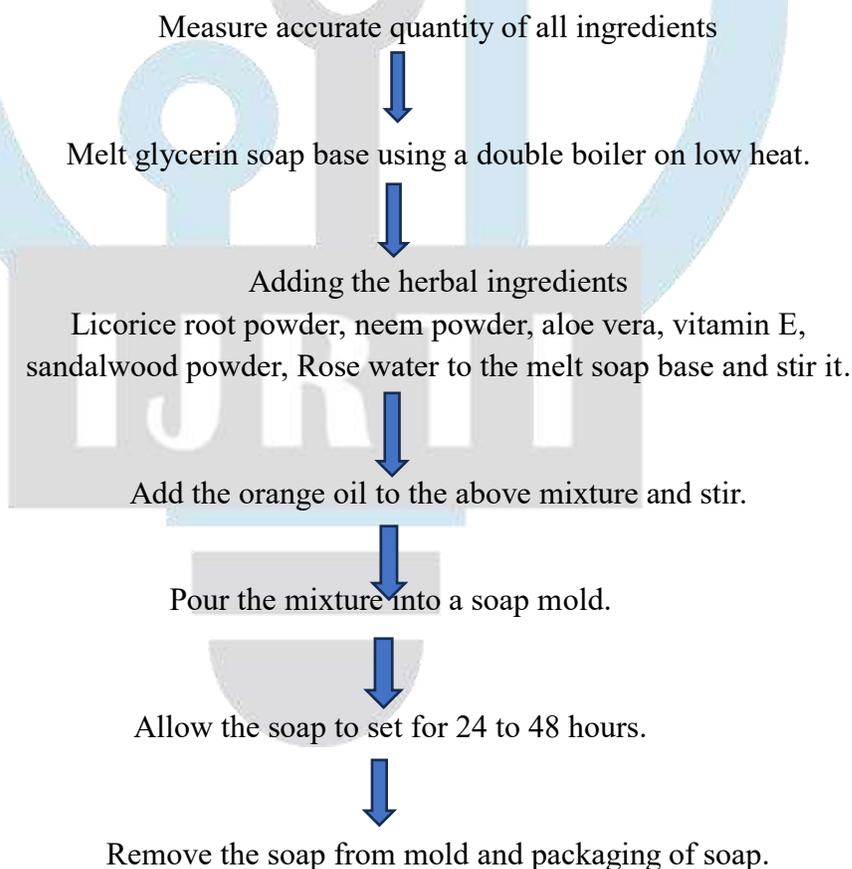
**Fig. 8: Soap base**

### Use:

- Keep skin acne free.
- Prevents premature ageing.
- Heals skin infection quickly.
- Repair damaged skin faster(16).

**Formulation table:****Table 1: Formulation of Herbal Soap**

Sr. No.	Ingredient	Quantity	Category
1	Licorice root powder	1 gm	Skin brightening
2	Neem powder	1 gm	Antibacterial
3	Aloe vera gel	2 gm	Miosturizing
4	Vitamin E	2 ml	Emollient
5	Sandalwood powder	1 gm	Antiseptic
6	Rose water	2 ml	Natural toner
7	Orange oil	0.50 ml	Fragrance
8	Soap base	90 gm	Soap matrix

**Method of Preparation:****Evaluation of Herbal Soap:****I. Organoleptic Evaluation:**

The formulated herbal soap was evaluated for colour, odour, texture and size.

## II. Physicochemical Evaluation:

- i. **pH:** By applying a pH strip to the freshly made soap and combining it with a solution of 1 gramme in 10 ml water, the pH of the created soap was measured. utilizing a digital pH meter.(19)
- ii. **Foam retention:** In a 100 ml graduated measuring cylinder, 25 ml of the 1% soap solution were added. 10 times were shaken while holding the cylinder with one hand. For 4 minutes, the volume of foam was measured every minute.[20]
- iii. **Foam height:** A sample of soap weighing 0.5 gramme was dissolved in 25 ml of pure water. Then, pour it into a 100 ml measuring cylinder after adding water to make the volume 50 ml. 25 strokes were administered while standing until the aqueous volume reached 50 ml, at which point the height of the foam above the aqueous volume was measured.
- iv. **Irritation:** performed by rubbing soap into the skin for ten minutes. If there is no irritation, the product is regarded as non-irritating.[21]

## Result and Discussion:

### I. Organoleptic Evaluation:

The formulated herbal soap was found to be light brown in colour, citrusy in odour, circular in shape and smooth in texture.

**Table 2: Organoleptic Evaluation**

Sr. No.	Parameters	Observation
1.	Colour	Light brown
2.	Odour	Citrusy
3.	Shape	Circular
4.	Texture	Smooth

### II. Physicochemical Evaluation:

The pH of formulated herbal soap was found to be 7.86, which indicates soap is acceptable for topical application. The foam retention of herbal soap was found to be 1cm per minute and foam height 5cm. The formulated herbal soap shows no irritation on skin.

**Table 3: Physicochemical Evaluation**

Sr. No.	Parameter	Observation
1.	pH	7.86
2.	Foam retention	1 cm per min.
3.	Foam height	5 cm
4.	Irritation	No Irritation

## Conclusion:

The herbal soap was successfully formulated using natural ingredients known for their therapeutic, antimicrobial, and skin-nourishing properties. The prepared soap exhibited acceptable physical characteristics including uniform texture, pleasant fragrance, and adequate hardness. Evaluation parameters such as pH (6–8), foaming ability, and moisture retention were within desirable limits, indicating good compatibility with skin. Additionally, no signs of irritation were observed during preliminary skin patch tests. The inclusion of ingredients like neem and licorice enhanced the antimicrobial and anti-inflammatory benefits of the soap, while aloe vera and jojoba oil contributed to its moisturizing effect. Overall, the formulated herbal soap is a safe, effective, and eco-friendly alternative to commercial soaps, with potential for cosmetic and dermatological use.

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