

FORMULATION AND EVALUATION OF UBTAN SCRUB SOAP BY USING GOAT MILK SOAP BASE

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ABSTRACT**Background:** The formulation of herbal soaps involves the incorporation of plant-based extracts, oils, and other natural ingredients, which offer therapeutic advantages like antimicrobial, anti-inflammatory, moisturizing, and soothing effects. The formulation and evaluation of herbal soaps require an in-depth understanding of various factors such as ingredient selection, surfactant choice, formulation methods, and the properties of the final product.**Objectives:** The present work involves the formulation and evaluation of Ubtan Scrub by using Goat Milk Soap base. **Methods:** The herbal soaps were formulated using Ubtan powder, walnut shell powder, Chandan Powder, Liquorice powder, Ambe Halad, Ubtan F.O, Goat Milk Soap base and evaluated for various properties like Appearance, colour, shape, odour, pH, fragrance, texture, hardness, foam retention (Fr), foam height (Fh). **Results:** Ubtan Scrub soap gave the most stable foam with over 4 minutes and 40 seconds foam retention when small amount of soap was dissolved in distilled water. The results of the formulated soaps, reveal that formula containing only one show less significant activity than formula with two or more combined. **Conclusion:** The results of the study offer potential alternative to the cosmetic industry in polyherbal soap production.**KEYWORDS:** Herbal soap, natural ingredients, antibacterial properties, anti-inflammatory effects, skin care.**1. INTRODUCTION****1.1 Skin**

Skin is the body's largest organ, serving as a protective outer layer that covers and shields internal organs, muscles, and bones. Skin is also called cutaneous membrane. It regulates body temperature, enables sensory perception, synthesizes vitamins, and acts as a barrier against pathogens and environmental damage.^[1] The skin's composition varies across different parts of the body, adapting its structure and thickness based on location and function. It may be thin and hairy or thick and hairless. For example, globous skin—thicker, hairless skin—is found on the palms, soles, and the flexor surfaces of the fingers to enhance protection and grip. In general, the skin comprises three main layers: the *epidermis*, *dermis*, and *hypodermis*. Each layer performs distinct roles essential for the skin's protective, sensory, and regulatory functions.

1.1.1 Most common skin disease

Most common skin diseases are Eczema, Acne, Rashes, Psoriasis, Allergy, dry skin, urticaria etc.

1.2 Soap

Soap has been an essential part of personal hygiene for thousands of years, with its primary function being the cleaning of the skin by removing dirt, oils, and other impurities. Historically, soaps were made from simple ingredients such as animal fats and lye. These traditional soaps were often harsh on the skin due to their high pH and the use of synthetic chemicals. However, as knowledge about the potential harmful effects of synthetic chemicals in personal care products has increased, there has been a noticeable shift towards more natural, skin-friendly alternatives, such as herbal soaps.^[2]

1.3 Herbal soap

Herbal soaps are formulated using plant-based ingredients, which are believed to offer gentler cleansing properties and provide added therapeutic benefits. These soaps are commonly enriched with a variety of herbal extracts, essential oils, and natural oils that not only cleanse the skin but also support its overall health and well-being. Unlike conventional soaps, which may contain harsh synthetic chemicals like sulphates, parabens, and phthalates, herbal soaps are marketed as free from harmful chemicals and are often biodegradable, making them more environmentally friendly.^[3]

Herbal soaps are typically formulated with a combination of herbal extracts, plant oils, and essential oils, which provide a host of therapeutic properties such as antimicrobial effects, Anti-inflammatory effects, Antioxidant properties. Herbs are the natural products mostly found in the treatment of almost all diseases and skin problems owing to their high medicinal value, cost effectiveness, availability and compatibility.^[4]

- Ubtan powder is Made with pure ingredients like turmeric, sandalwood, Multani Miti & rose petals. It helps lighten pigmentation and enhance natural glow. Ubtan has been traditionally used for skin brightening, de-tanning, exfoliating, and improving overall skin texture. It helps remove dirt, excess oil, and dead skin cells while gently clarifying the skin to reveal a smoother, more even-toned complexion Ubtan powder is suitable for all skin types and can be used on the face and body.^[5]
- Walnut shell powder is a natural exfoliator derived from walnut shells. It contains alpha-hydroxy acids (AHAs) that help remove dead skin cells and promote cell turnover. Walnut shell powder can improve circulation, reduce inflammation, and leave skin soft and smooth. It is also compatible with most materials used in cosmetics and pharmaceutical preparations. Walnut shell powder is also known as purified walnut shell and is normally in a powdered form. Walnut shell powder has anti-inflammatory properties that can help reduce redness and irritation.^[6]

- Chandan powder is the finely ground heartwood of the sandalwood tree, known botanically as *Santalum album*. The best variety comes from Mysore, Karnataka, where the soil and climate produce sandalwood with a rich concentration of fragrant essential oil. Sandalwood is loved for giving skin a natural glow. Regular use may help reduce dullness, uneven tone, and dark patches, leaving the skin looking refreshed and luminous. Sandalwood is rich in antioxidants that help protect the skin from free radical damage. Chandan is known for its antibacterial and anti-inflammatory properties. Applied as a paste, it helps calm redness, swelling, and irritation around active pimples.^[7]
- Liquorice powder is a natural skin brightener. Its antioxidant and anti-inflammatory properties. it Reduce dark spots, lighten pigmentation, soothe redness and acne, Heal sun damage.
- Mango ginger, also called an Ambe halad in India, is an unusual rhizome that looks like ordinary ginger, but has a rather astonishing twist: it smells and tastes like raw mango. The benefits of mango ginger range as widely as they treat inflammation, improve digestion, and improve skin health, among others. Ambe halad is known by its tang, as well as its anti-inflammatory properties, Ambe Halad, or Mango ginger, has benefits like skin care, which is one of its essential benefits. It has antibacterial and anti-inflammatory properties, and it is helpful in acne, rashes and pigmentation.^[8]
- Ubtan Fragrance oil is used for its calming and relaxing properties. It has mild antimicrobial effects and is known to reduce skin irritation and redness.^[9]

2. MATERIALS AND METHODS

2.1 MATERIALS

Collection of active ingredients like Ubtan powder, Walnut shell powder, Chandan powder, liquorice powder, Ambe halad, ubtan FO, Goat milk soap base were collected from different manufacturing company and local market.

Table 1: Common herbal ingredients in Ubtan Scrub soap formulation.^{[10],[11],[12]}

Sr.no	Name of ingredients	Quantity to be taken	Category
1	Ubtan Powder	40gm	Antiseptic & Antifungal
2	Walnut shell powder	40gm	anti-inflammatory
3	Chandan powder	40gm	antioxidants
4	Liquorice powder	40gm	antioxidant and anti-inflammatory
5	Ambe halad	20gm	antibacterial and anti-inflammatory
6	Ubtan fragrance oil	40 to 100ml	Anti-ageing, Moisturizer
7	Goat Milk Soap Base	20000gm (20kg)	Remove dirt from skin

2.2 METHODS

Step 1 — Preparation

1. Clean and sanitize all equipment and moulds.
2. Arrange all raw materials as per batch sheet.

3. Sieve all herbal powders to remove lumps and coarse particles.

Step 2 — Cutting Soap Base

1. Cut the Goat Milk Soap Base into small cubes for faster melting.
2. Transfer to stainless steel melting vessel.

Step 3 — Melting

1. Heat using double boiler method.
2. Maintain temperature between 65°C–75°C.
3. Do not overheat or boil the base.
4. Stir slowly to avoid bubble formation.

Step 4 — Addition of Herbal Powders**Prepare premix**

- Ubtan Powder
- Walnut Shell Powder (Mix 30 gm to the powder & keep 10 gm for garnishing purpose)
- Chandan Powder
- Liquorice Powder
- Ambe Halad

Procedure

1. Mix all powders uniformly in a dry bowl.
2. Slowly add powder blend into molten soap base.
3. Stir continuously for uniform dispersion.
4. Ensure no lump formation.

Step 5 — Addition of Fragrance

1. Cool soap mixture slightly to around 55°C–60°C.
2. Add Ubtan Fragrance Oil.
3. Mix gently for 2–3 minutes.

Recommended usage

- Mild fragrance: 40–60 ml
- Strong fragrance: 80–100 ml

Step 6 — Pouring

1. Pour finished mixture into soap moulds.
2. Spray surface lightly with alcohol to remove air bubbles (optional).
3. Allow moulds to stand undisturbed.

Step 7 — Cooling & Demoulding

1. Cool at room temperature for 4–6 hours.
2. Demould carefully once fully hardened.
3. Keep soaps on curing racks for 12–24 hours for moisture stabilization.

3. EVALUATION PARAMETERS

Appearance: The soap should have a smooth, uniform texture.

Colour & shape: Colour and shape was checked by naked eye.

Odour: The smell of formulation was checked by applying preparation on hand and feels the fragrance of perfume.

pH: The pH of the soap is one of the most important properties for ensuring its compatibility with the skin.

Herbal soaps should ideally have a pH of 5 to 5.5, which closely matches the natural pH of human skin.^[13]

Foam Height: 0.5 grams of sample of soap was taken dispersed in 25 ml distilled water. Then, transferred it in to 100ml measuring cylinder; volume was make up to 50 ml with water. 25 strokes were given and stand till aqueous volume measured up to 50 ml and measured the foam height, above the aqueous volume was measured.

Foam Retention: 25 ml of the 1% soap solution was taken in to a 100 ml graduated measuring cylinder. The cylinder was covered with hand and shaken 10 times. The volume of foam at 1 minute intervals for 4 minutes was recorded.^[14]

Irritation: It is carried out by applying soap on the skin for 10 minutes. If no irritation then it is considered as non-irritant product.^[15]



Figure no. 1: Ubtan Scrub soap.

4. RESULT AND DISCUSSION**EVALUATION PARAMETERS**

Table 2: Evaluation Parameters Required For Ubtan Scrub Soap.

S.NO	PARAMETERS	VALUES
1	Appearance	Smooth herbal soap
2	Colour	Brown herbal tone
3	Odour	Aromatic
4	Shape	Rectangle shape
5	pH	5 to 5.5
6	Hardness	Properly set , non- sticky
7	Foam Height	2.5–3.0 cm
8	Foam Retention	3 Minutes
9	Irritation	No Irritation

The above given table describes the Appearance colour, odour, shape, pH, Hardness, foam height and foam retention, irritation, of the Ubtan Scrub soap. The Appearance of the formulation was smooth. The colour of the formulation was brown. The odour of the formulation was aromatic. The shape of the formulation was rectangle. The pH of formulation is 5 to 5.5 which is likely close to skin pH and there is no irritation beside foam retention was 3 min. and foam Height was 2.5–3.0

cm. The hardness of the formulation was Properly set & non sticky.

5. CONCLUSION

The most important thing that ubtan scrub soap possess is that free from chemicals and are more eminent than synthetic soaps. Thus, in this research paper, the prepared ubtan scrub soap possesses anti-oxidant, Antiseptic, Antifungal, Anti-bacterial and anti-inflammatory properties that can be used as beauty regime. it turns out herbal soap works well when made with plant-based materials, combined with essential oils and a Goat Milk Soap Base using an affordable, straightforward technique. Looking at how the product turned out, texture was firm enough, smell came across as nice, bubbles formed just right during testing. Appearance met expectations too, while the acidity level stayed within safe range for touching human skin.

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