# Research Article on Herbal soap: Moringa Oleifera

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*Abstract*-Our research's goal is to create a hygienic soap using the cold process method, which is the simplest and most widely used technique, using Moringa oleifera leaf extract for skin protection.

The preparation of Moringa oleifera leaf extract soap involved combining a soap base, Moringa oleifera leaf extract, glycerine, coconut oil, turmeric, and vitamin E in a saponification reaction. The soap was then tested for organoleptic qualities like colour, odour, clarity, and appearance, as well as physical attributes like pH, foam retention, foam height, and skin irritation test.

Numerous studies have demonstrated the antibacterial, antioxidant, and antifungal properties of Moringa oleifera leaf.

The soap made from Moringa oleifera leaf extract provides skin protection for people. Synthetic soaps have an impact on skin since they contain additional chemicals that create negative skin effects including inflammation and itching. In order to overcome these issues, humans require specific skin care. Herbs contain many known and unknown therapeutic effects and are abundant in phytochemicals. People are using herbal medicines these days, and they are aware of the health benefits of herbs. It was less harmful to the environment, less expensive, and accessible to rural residents.

## I. INTRODUCTION

The most commonly grown species in the monogeneric Moringeceae family is Moringa olifera. It is native to the northern Indian sub-Himalayan region, although it is now found across the tropics and subtropics. [1-3]

Ancient Africa communities used a type of herbaceous plant called Moringa Olifera to combat hunger. Fresh moringa leaves have seven times the vitamin C of oranges, four times the vitamin A of carrots, four times the calcium of milk, three times the potassium of bananas, and twice the protein of yogurts. It has long been used to treat anxiety and anemia. Psotiasis, cholera, conjunctivitis, bronchitis, blackheads, cough, diarrhea, eye and ear infections, fever, enlarged glands, headache, joint discomfort, hysteria, and abnormal blood pressure. There have been reports of antibacterial spasmodic and antiulcera properties in Moringa olifera. [4-6] Taxonomical Classification:[7]

• Kingdom – Plantae

- Sub kingdom Tracheobionta
- Super Division Spermatophyta
- Division Magnoliophyta
- Class Magnoliopsida
- Sub class Dilleniidae
- Order Capparales
- Family Moringceae
- Genus Moringa
- Species oleifera

Synonyms: Around the world, Moringa oleifera is referred to by a number of names.

- Latin Moringa oleifera
- Sanskrit Subhanjana,
- Hindi Saguna, Sainjna
- English Drumstick tree, Horseradish tree

## Cosmetic use of Moringa-

Behen oil, which is derived from Moringa olifera seeds, is frequently used as a carrier oil in cosmetic preparation. Because it is light, Moringa olifera is easy to apply to the skin. It is an excellent oil to use in aromatherapy and massage. It can be used as a skin conditioner and moisturizer for hair and body care. Other applications include the production of soap and the manufacturing of cosmetics like creams and lip balms. A semisolid fraction of moringa oil, moringa olifera butter, is utilized in infant products to provide a skin-softening and smoothing effect that lasts a very long time and is resistant to free radicals.[8]



Fig. (a) Marketed herbal soap

## Herbal Soap-

Herbal soap is made from a range of natural ingredients derived from various plants and herbs. Herbs including chamomile, lavender, mint, and rosemary are commonly used to make herbal soap. The well-known relaxing, rejuvenating, and healing properties of herbal soap make it a popular choice for people with dry or sensitive skin. There is a greater chance of negative outcomes like skin rashes and allergic reactions because many cosmetic products on the market today are tainted and many other beauty preparations are of poor-quality responses, and even the emergence of skin illnesses.[9]

Because herbal soap formulations contain antibacterial and antifungal ingredients, they are considered medications or pharmaceuticals. [10] cosmetic This preparation is applied topically and comes in a variety of forms, including creams, lotion gels, soaps, solvent extracts, and ointments. It also has antibacterial qualities.[11] Numerous skin conditions have been treated with a range of creams and soaps.[12]

Making herbal soap has antibacterial, anti-aging, anti-oxidant, and antiseptic qualities, making it a medication. It mostly treats injuries and diseases or promotes health by using plant parts such as seeds, rhizomes, nuts, leaves, flowers, and pulps.[13] No artificial colorants, flavorings, fluorides, or other chemicals are present in herbal soap. Because of their great medicinal value, affordability, accessibility, and compatibility, herbs are natural products that are primarily used to treat nearly all illnesses and skin conditions.[14]

Advantages of herbal soap-

- 1. Gentle on the skin: Compared to synthetic soap, herbal soaps are frequently kinder and milder on the skin, making them suitable for more delicate skin types.
- 2. Natural ingredient: They usually contain natural ingredients like shea butter, coconut oil, olive oil, and aloe vera that hydrate and nourish the skin.
- 3. Chemical-Free: Herbal soaps are less likely to cause allergic reactions and skin irritation

because they don't include harsh chemicals, artificial fragrances, or synthetic colors.

- 4. Environmentally Friendly: Because they are manufactured with natural ingredients, herbal soaps are usually biodegradable and more environmentally friendly than synthetic components.
- 5. Aromatherapy benefits include lowering stress, improving mood, and promoting relaxation. Aromatherapy can be achieved by combining essential oils with herbal soaps.
- 6. Natural antibacterial properties: Some herbal ingredients, such as tea tree oil and neem, contain antibacterial properties that help to protect the skin from infections and cleanse it.

## Skin-

The largest organ in the body, the skin is susceptible to a variety of skin problems due to its exposure to the environment, including psoriasis, eczema, warts, acne, and hives. The body's largest organ, which is also one that is frequently exposed to the outdoors, needs to be kept clean and free of any bacteria that might be floating around outside in order to prevent skin issues. [15-16]

Many plant parts, such as the stem, leaves, roots, bark, flower, and fruit, can be used to make herbal skincare formulas that combat bacteria, fungi, and germs. When these medications are meant to be applied topically, they are frequently made as creams, lotions, gels, soaps, and ointments. Herbal soap is one of the most often used formulas for skincare and the treatment of skin conditions. [17-18]

Many cleaning supplies and personal care products contain soap, which is a salt of fatty acids. In the home, soaps are used for a variety of purposes, but the most popular ones include cleaning, bathing, and washing. [19-20]

Saponification is the process by which triglyceride fats hydrolyze into free fatty acids and then react with alkali to form crude soap.[21]

Chemical ingredients:

Soap base, Moringa oleifera leaf extract, glycerine, coconut oil, turmeric, vitamin E. [22-24] Chemical Ingredients and its use-

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Sr.no.	Ingredients	Uses		
1	Soap base	Cake Formation		
2	Moringa Oleifera	Vitamin C		
3	Glycerine	Humectant		
4	Coconut Oil	Nourish Dry Skin, Anti-aging		
5	Turmeric Powder	Antioxidant, colouring agent		
6	Vitamin E	Anti-acne, skin glow		

Table (a) Ingredient and their uses

## APPLICATION OF INGREDIENTS-

- 1. Soap Base-
- It is used for cake formation.
- It is making smoothness of soap. [25]



Fig. (b) Soap Base

- 2. Moringa oleifera leaves-
- Kingdom: Plantae
- Clade: Tracheophytes
- Clade: Angiosperms
- Clade: Eudicots
- Clade: Rosids
- Order: Brassicales
- Family: Moringaceae
- Genus: Moringa
- Species: M. oleifera



Fig. (c) Moringa Oleifera Leaves

- It is used to keep skin from breaking out with acne.
- Additionally, it aids in the removal of blackheads, pimples, dark spots, and imperfections.
- It is a whitening agent for the skin.
- It has antibacterial qualities as well. Vitamins A and C, which are included in moringa, aid in the healing of injured skin cells.

- Additionally, moringa oil may help to improve the way your skin looks. Acne, dark spots, and other skin conditions can leave your face with unsightly scars and blemishes.
- Moringa may help to level out these features and make you look more vibrant. [26-27]
- 3. Glycerine-
- It serves as a moisturizer. In soap, glycerine serves as a humectant.
- To put it another way, glycerine helps ensure that your skin maintains its natural moisture content to shield it from the damage that comes with being dry.
- Glycerine and other humectants allow your skin to breathe without creating a barrier. Additionally, glycerine is utilized as a solvent. [28-29]



Fig. (d) Glycerine

- 4. Coconut Oil-
- Coconut oil helps soothe inflamed skin, lessen redness, and hydrate it.
- It contains a lot of fatty acids that protect and nourish your skin, as well as oil that helps heal cracked skin.
- In addition to encouraging wound healing, coconut oil may lessen stretch marks. Soap made from coconut oil has antibacterial, antifungal, anti-inflammatory, and anti-aging qualities.
- It could be beneficial for several skin conditions. Even the most sensitive skin can benefit from coconut oil's moisturizing properties, and it may even improve lather. [29-33]



Fig. (e) Coconut Oil

## II. MATERIAL AND METHOD

Extraction of Moringa Oleifera Leaves-

- Collection of material-
- Common name: Sahjan

Family: Moringaceae

The leaves of Moringa oliefera are harvested in February 2023. The barks are gathered in the Lucknow, India, area. In rural areas, Moringa oleifera is commonly referred to as "sahjan" and is used to

Formul	ation	of	her	bal	soap-	

make herbal soap that has anti-inflammatory and vitamin A and C properties. [26-27]

Method of Extraction-

- Initially, gather branches of Moringa oleifera from the surrounding area of Lucknow, separate the leaves from the branches, and then wash them.
- Pour the leaves into the grinder, add enough distilled water, and grind.
- Following grinding, Moringa oleifera extract is filtered via filter paper, collected in an appropriate container, and stored.



Fig. (f) Extraction of Moringa leaves

	induction of notour soup				
Sr.No	Ingredients	Quantity F1	Quantity F2		
1	Soap Base	50 gm	60 gm		
2	Moringa Oleifera extract	10 ml	12 ml		
3	Glycerine	5 ml	6 ml		
4	Coconut oil	4 ml	5 ml		
5	Turmeric powder	2 gm	3 ml		
6	Vitamin E	5 ml	6 ml		

Table (b) Formulation of Herbal soap

Preparation of soap-

- 50g of weighed, finely chopped soap base was added to hot water and allowed to melt.
- To create a uniform mixture, add 10 ml of extract, 2 grams of turmeric, 5 ml of glycerine, 4 ml of coconut oil, and 5 ml of vitamin E to the melted soap base.
- Stir continuously for 30 to 40 minutes.
- After filling the mold with the prepared semisolid soap mixture, the mold was placed in the refrigerated for thirty minutes.
- Soap was made from Moringa oleifera leaf extract. [34-36]



Fig. (g) Liqud of soap



Fig. (h) Freezing of Soap



Fig.(i) Moringa Oleifera Soap

# EVALUATION HERBAL SOAP [37-43]

The following physicochemical properties, including color, scent, pH, clarity, dirt dispersion, foam height, foam retention, skin irritation, and saponification value, were examined to confirm the final formulations' effectiveness and quality. The herbal soap formulation was tested using traditional procedures.

- 1. Organoleptic evaluation:
- Color: The herbal soap was visualized on a white background to show the clarity of formulations F-1 and F-2 and to identify its hue.
- Odour/Aroma: We employed two distinct techniques to assess the odour of formulations F-1 and F-2. The sample was heated on a hot plate in the first approach. In the second procedure, five to six individuals, including both males and females, inhale a direct sample.
- Shape: Through sensory and visual analysis, organoleptic qualities like shape and clarity were assessed.

- 2. Physical Evaluation-
- pH: One percent of the sample must be prepared in order to measure the pH or hydrogen ion concentration. To calibrate the pH meter, we used buffer solutions with pH values of 4 and 7. As with the reference solution, take pH values at room temperature. The pH level of the solution used to calibrate the electrode and the meter should be noted and recorded. Following three examinations of each sample, the final readings were calculated by averaging the three distinct readings that were acquired from each sample.
- Dirt Dispersion; First, we make a 1% sample solution in a measuring cylinder and add two drops of ink to it. This is known as dirt dispersion. After then, a hand was placed over the measuring cylinder and it was shaken ten times. Look into why the ink concentration in the foam is thought to be of poor quality. The water section then contains the last of the dirt particles. It was observed how much ink was present in the foam.
- Wetting time: To find out how long it took the sample to get wet, we cut a piece of cotton fabric into a disc shape with an inch diameter. We then weigh the sample. A diluted sample (a 1% solution) and a piece of cotton cloth to place on top of the sample must next be prepared. On top of the 1% sample solution, the cloth disc was let to float freely. Wetting time is the term used to describe the precise amount of time it took for the cloth disc to transition from floating to sinking. A shorter time to sink is linked to a higher wetting efficiency.
- Ability to form foam: The ability to form foam was assessed using the Cylinder Shake Method. We started by adding 50 ml of a 1% sample solution to a 100 ml measuring cylinder and giving it ten vigorous shakes. Following a minute of shaking, we recorded the total volume of foam and measured the height of the foam that had developed.
- Foam stability: The ability to foam was assessed using the Cylinder Shake Method. We started by adding 50 ml of a 1% sample solution to a 100 ml measuring cylinder. Ten forceful shakes were given to the cylindrical container while it was covered with the hand. After 10 minutes, the foam's volume was computed.
- Moisture content: Ten grams of the substance were cooked for an hour at 100 to 105 degrees Celsius in a hot air oven. The actual weight of

the tarred china dish was then subtracted from the sample's and the dish's combined weight. The substance's weight was noted, and the formula below illustrates how to get the percentage of moisture content present in the material.

Moisture content = (Difference in weight/initial weight) x100

III. RESULT

**Evaluation Parameter-**

The handmade soap derived from Moringa oleifera leaf extract was made and tested for physiochemical characteristics like pH, foam height and retention duration, skin irritation, washing ability, and moisture content level, as well as organoleptic characteristics like colour, odour, look, and form. Below are the tabulated assessment parameters results for the handmade Moringa leaf extract.

Sr.No	Parameters	Formulated Moringa Leaf Extract
1	Colour	Dark green
2	Odour	Characteristics
3	Appearance	Good
4	Shape	Round
5	pH	8
6	Foam retention time	2-3 min
7	Foam height	10 ml
8	Skin irritation test	Non-irritant
9	Washing capability	Good
10	Moisture content	7.5%

Table (c) Evaluation parameter

## IV. CONCLUSION

A wide range of advantages for skin health and protection have been shown by the production and testing of handmade soap manufactured from Moringa oleifera leaf extract, which has shown remarkable promise as a sustainable and natural cleansing agent.

It displays higher organoleptic qualities including color and odor, as well as better physical qualities like a decent pH, outstanding foaming ability, and optimal moisture content. Moisturizing, nourishing, and protecting the skin while addressing issues like acne, ageing, and hyperpigmentation are just a few of the clinical benefits that come from Moringa's nutrient-dense profile. Turmeric also has antioxidant activity, and vitamin E is used to reduce acne, and coconut oil maintains moisture levels and has antiinflammatory qualities.

It is appropriate for a variety of skin types, including sensitive skin, because to its mild and non-irritating qualities. Its affordability, accessibility, and environmental friendliness are all improved by its easy preparation and use of locally obtained ingredients. The soap is a great substitute for storebought soap because it supports sustainable practices and encourages healthy, glowing skin. Furthermore, it guarantees that more research and development will be conducted because of its enormous impact on skin health and the environment, as well as its potential for wider use. A noteworthy invention that demonstrates the potential of natural ingredients in promoting sustainability and skin wellness is the addition of Moringa leaf extract to homemade soap. The handmade soap manufactured from moringa leaf extract is well-positioned to satisfy consumer demand for natural and environmentally friendly products by providing a cost-effective, environmentally friendly, and sustainable skin care solution.

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