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Review Article

Preparation of Herbal Soap from Moringa Olifera Leaves

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ABSTRACT

Many commercial soaps and detergents are composed of chemicals that may pose risks to skin health. Opting for natural herbal soaps and detergents presents a viable alternative, offering benefits such as relaxation and stress relief. Conventional soaps often contain harsh chemicals that can harm the skin, highlighting the urgent need for the development of herbal soaps enriched with plant extracts. Certain plants are recognized for their antimicrobial, anti-inflammatory, anti-scar, anti-spot, anti-acne, and anti-wrinkle properties, making them suitable for incorporation into herbal soaps. Moringa leaves (Moringa oleifera) are recognized as a significant source of bioactive compounds, which include flavonoids, phenolic acids, tannins, and terpenoids. These compounds offer considerable advantages for skin health, attributed to their antioxidant, anti-inflammatory, and antimicrobial properties. Research has shown that the chemical composition of these leaves can improve skin hydration and provide a barrier against environmental stressors. The soap was created by combining a soap base, Moringa oleifera leaf extract, glycerin, coconut oil, turmeric, and vitamin E, facilitating a saponification reaction. The resulting Moringa oleifera leaf extract soap was then assessed for its organoleptic properties, including color, odor, clarity, and overall appearance, as well as its physical properties such as pH, foam retention, foam height, and skin irritation potential. Numerous studies have demonstrated that Moringa oleifera leaves possess antibacterial, antioxidant, and antifungal properties. Our research confirms that the Moringa oleifera leaf extract soap provides effective skin protection for human use. Synthetic soaps often adversely affect the skin due to their high chemical content, leading to issues such as itching and irritation.

INTRODUCTION

Moringa is the most extensively cultivated species within the monogeneric family Moringaceae, which is indigenous to the sub-Himalayan regions of India, Pakistan, Bangladesh, and Afghanistan. This fast-growing tree, commonly referred to as the horseradish tree, drumstick tree, benzolive

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tree, ben oil tree, and cabbage tree, was utilized by ancient civilizations such as the Romans, Greeks, and Egyptians. Today, it is widely cultivated and has become naturalized in numerous tropical regions. It has garnered the designation of 'miracle' tree owing to its diverse beneficial properties. Although it is a perennial softwood tree with timber of relatively low quality, it has been promoted for centuries for its traditional medicinal, agricultural, and industrial applications [1]. Moringa leaves are recognized for their high content of β-carotene, protein, vitamin C, calcium, and potassium. They serve as an excellent source of natural antioxidants, which can improve the shelf-life of foods containing fats. This is attributed to the presence of various antioxidant compounds, including ascorbic acid, flavonoids, phenolics, and carotenoids [2]. Moringa plants are shrubs commonly utilized as barriers in agricultural fields, gardens, rice paddies, and residential yards. Nearly every part of the moringa plant offers various benefits, including the roots, stems, leaves, flowers, fruits, and seeds [3,4].

Herbal soaps containing herbal extracts are expected to exhibit significant antibacterial, antimicrobial, anti-aging, antioxidant, and antiseptic properties. They should also enhance skin conditioning, produce abundant lather, possess a pleasant fragrance, and be gentle on the skin. Furthermore, these herbal soaps are free from artificial additives and chemicals, such as synthetic fragrances, flavors, and fluoride [5,6].

Herbal pharmaceuticals are increasingly preferred over synthetic alternatives for several reasons, including the following: [7-9]

- Reduced adverse effects
- Greater safety and efficacy
- Readily available
- Better compatibility with other components
- Notable therapeutic benefits
- Higher tolerability across diverse skin tones
- Economically viable.

PLANT PROFILE [10-12]

- **Synonym:** Drumstick tree, horseradish tree
- **Biological source:** leaves of moringa olifera
- **Family:** Moringaceae
- **Color:** Whitish grey
- **Height:** 10-12m & 45 cm in diameter
- **Geographical source:** Asia and Africa
- **Chemical constituents:** Flavonoids, phenolic acids, terpenes, alkaloids, fatty acids, protein, fiber
- **Chemical composition**: leaves, flowers, stem, seeds, fruit
- **Uses:** skin protection, liver protection, treat edema, it is having antioxidant properties, protect and nourishing the hair and skin, reduce blood sugar level, also treat obesity etc.

ADVANTAGES

Antioxidant Properties: Moringa is rich in antioxidants, which help protect the skin from environmental damage caused by free radicals. These antioxidants can help reduce signs of aging, such as wrinkles and fine lines.

Antibacterial and Antifungal Properties: Moringa contains compounds that have antibacterial and antifungal properties. This can help keep the skin clean and prevent breakouts.

Moisturizing and Nourishing: Moringa oil is often used in soaps as it is a natural moisturizer. It can help keep the skin hydrated and soft.

Gentle Exfoliation: Moringa can help gently exfoliate the skin, removing dead skin cells and revealing a brighter complexion.

Soothing and Calming: Moringa can help soothe irritated skin and reduce inflammation. This can be beneficial for those with sensitive skin or conditions like eczema.

Natural and Chemical-Free: Moringa herbal soaps are often made with natural ingredients and free from harsh chemicals, making them a good choice for those with sensitive skin.

Suitable for All Skin Types: Moringa herbal soaps can be beneficial for all skin types, including dry, oily, and sensitive skin.

Affordable and Easily Available: Moringa herbal soaps are generally affordable and readily available, making them accessible to a wide range of people.

DISADVANTAGES

Limited Scientific Evidence: While anecdotal evidence and traditional uses suggest numerous benefits, scientific research specifically on the effects of moringa soap on human skin is limited. More robust clinical studies are needed to fully understand its efficacy and safety.

Potential for Allergic Reactions: Although rare, some individuals may experience allergic reactions to moringa or other ingredients in the soap. This can manifest as skin irritation, itching, or rashes. It's crucial to perform a patch test on a small area of skin before using the soap extensively.

Varying Quality: The quality of moringa herbal soaps can vary significantly depending on the source of the moringa, the manufacturing process, and the inclusion of other ingredients. Some soaps may contain synthetic additives or low-quality moringa extracts, potentially diminishing their effectiveness or even causing adverse reactions.

Not a Cure-All: Moringa herbal soap is not a miracle cure for all skin problems. It may not be effective for severe skin conditions or specific concerns like acne or psoriasis. It's essential to have realistic expectations and consider consulting a dermatologist for personalized advice.

Potential for Drying Effects: While moringa oil has moisturizing properties, some moringa soaps, especially those with high alkaline content, may have a slightly drying effect on the skin. This is particularly relevant for individuals with very dry or sensitive skin.

MATERIAL AND METHOD [13-16]

- The leaves of Moringa oleifera were collected from the village of Thiruppalapandal. These leaves were subsequently isolated and washed with distilled water.
- The leaves were then air-dried in a shaded area at room temperature to eliminate moisture.
- Once dried, the leaves were ground using a mixer grinder to obtain a fine powder.
- Finally, the powdered sample was subjected to the extraction process.

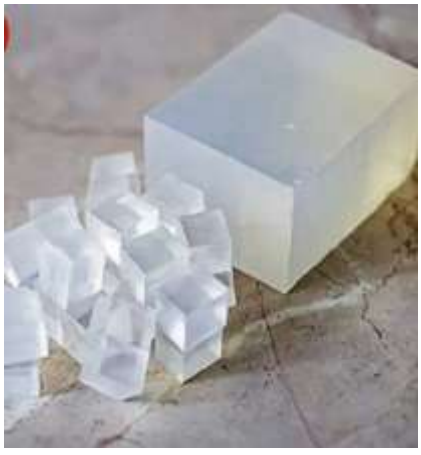
CHEMICAL COMPONENTS AND THEIR APPLICATIONS [17-19]

1. **Soap Base** - Formation of cakes
2. **Moringa Oleifera Leaf Extract** - Source of Vitamin C, skin protection
3. **Glycerin -** Moisturizing agent

4. **Coconut Oil -** Nourishment for dry skin, anti-aging properties
5. **Turmeric Powder -** Antioxidant, coloring agent
6. **Vitamin E -** Treatment for acne, enhancement of skin radiance

COCONUT OIL

GLYCERIN



SOAP BASE

VITAMINE-E

PREPARATION OF MORINGA OLEIFERA LEAF EXTRACT [20,21]

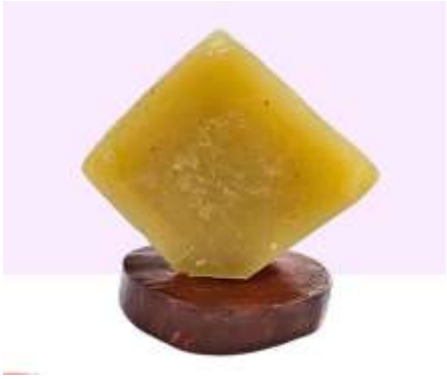
DECOCTION METHOD:-

- This method is employed for the extraction process.
- Initially, 15 grams of Moringa oleifera leaves are precisely weighed and combined with 60 milliliters of distilled water, followed by boiling for 15 minutes.
- Subsequently, the crude extract is filtered through muslin cloth to minimize the loss of extract.
- The resulting aqueous extract is utilized in the formulation of Moringa oleifera leaf extract soap.

PREPARATION OF SOAP [15,22,23]

Fifty grams of soap base were measured and cut into small pieces, then added to boiling water to facilitate melting. Subsequently, 10 milliliters of extract, 2 grams of turmeric, 5 milliliters of glycerin, 4 milliliters of coconut oil, and 5 milliliters of vitamin E were incorporated into the melted soap base. The mixture was stirred continuously for 30 to 40 minutes to achieve a homogeneous consistency. The resulting semi-solid soap mixture was then poured into a mold, which was placed in the refrigerator for 30

minutes, resulting in the formation of Moringa oleifera leaves extract soap.



MORINGA SOAP

EVALUATION PARAMETERS FOR HERBAL SOAP [24-27]

1.ORGANOLEPTIC ASSESSMENT:

a) **Color:** Examine the soap for a consistent and attractive hue that accurately represents its natural components. There should be an absence of discoloration or irregular shades.
b) **Aroma:** Evaluate the soap's natural scent. It should be enjoyable and reflective of the herbal ingredients utilized, free from any artificial or chemical notes.
c) **Texture:** Inspect the soap's surface for smoothness and uniformity. It should not exhibit any grittiness, cracks, or excessive greasiness.
d) **Form:** The assessment of the soap's shape can be conducted through both sensory and visual analysis.

2. PHYSICAL ASSESSMENT:

quality, enhancing the washing experience for users.

a) Skin irritation test: The skin irritation test is an essential component in evaluating the safety and dermatological compatibility of herbal soap. This test entails applying the soap to a small, controlled area of skin, typically on the forearm, to observe any potential adverse reactions. The application follows standardized protocols, such as employing a patch test or a controlled usage method over a specified duration, usually ranging from 24 to 48 hours. Throughout and following this period, the skin is monitored for any signs of irritation or discomfort. [28-30]

b) Washing capability: The residue remaining on the skin or washcloth following use is analyzed, as an excessive amount can influence both the soap's efficacy and the comfort experienced by the user. Furthermore, the pH level of the soap is assessed to confirm its compatibility with the skin's natural pH, thereby reducing the risk of irritation and dryness. The stability of the lather over time and the soap's effectiveness in removing various types of dirt and oils are also scrutinized to ensure comprehensive cleansing. These factors collectively contribute to the evaluation of the overall washability and effectiveness of herbal soaps for everyday use. a) pH: The pH level of herbal soap should align closely with the skin's natural pH, generally ranging from 4.5 to 5.5, to avoid irritation and preserve skin equilibrium. Utilize pH test strips or a pH meter to evaluate the soap's acidity or alkalinity.

c) Foam retention: The assessment of foam retention in herbal soap involves a standardized test designed to evaluate the soap's ability to sustain its lather over time. In this procedure, a predetermined quantity of soap is lathered with a specific volume of distilled water, and the resulting foam is observed and measured at designated intervals, including immediately after lathering, as well as at 1, 5, and 10 minutes. The volume or height of the foam is documented to analyze its stability and duration. Additionally, the texture of the foam is examined to ensure it remains creamy and stable, rather than collapsing

or thinning quickly. This evaluation is essential for determining the soap's effectiveness in maintaining a satisfactory lather throughout its use, which is vital for efficient cleansing and overall user satisfaction.

d)Foam height: The measurement of foam height is a significant factor in assessing the lather quality of herbal soap, as it has a direct impact on user satisfaction and cleansing effectiveness. To evaluate foam height, a specific amount of herbal soap is mixed with a measured volume of distilled water, and the mixture is agitated to create foam. The height of the foam is then recorded immediately after lathering and at subsequent intervals, such as 1, 5, and 10 minutes, using a standardized measurement technique. This assessment offers valuable insights into the soap's capacity to generate a rich, stable foam that retains its height over time. A greater and more stable foam height signifies superior lather performance and overall

e) Moisture content is essential for the usability and durability of the soap, impacting its hardness and shelf life. To determine this, the initial weight of the soap is recorded before drying, followed by a controlled drying process at a fixed temperature and duration. After drying, the weight of the soap is measured again and compared to the initial weight to calculate the percentage of water content in the soap. [21,31,32]

Moisture Content = (difference in weight/initial weight) x 100.

RESULT:

Sr. No.	Parameters	Formulated Moringa Leaf Extract Soap
1	Color	Dark yellowish green
2	Odor	Characteristics
3	Appearance	Good
4	Shape	Round
5	Ph	8
6	Foam Retension time	5-8 min
7	Foam height	12ml
8	Skin irritation test	Non irritant
9	Washing capability	Good
10	Moisture content	8.5%

CONCLUSION:

This study aims to develop and assess herbal soap utilizing the condensation process method. The soap exhibits essential medicinal properties, soothes the skin, and addresses various skin conditions. The formulation demonstrates excellent physical characteristics. Results from multiple tests indicate that the formulation possesses remarkable foaming abilities, appropriate pH levels, and moisturizing properties. The herbal soaps produced do not exhibit any adverse effects. The naturally sourced M. oleifera leaves are known for their antimicrobial, antifungal, and anti-inflammatory properties, and they are effective in alleviating acne, dark spots, and other skin issues. Additional ingredients such as coconut oil, turmeric powder, and vitamin E have been shown to be safe and beneficial, contributing to skin health through their moisturizing and cleansing effects. Therefore, further investigation into the potential application of these soaps in treating skin infections is warranted.

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