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HERBAL NEEM SOAP:- AN OVERVIEW

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ABSTRACT

Herbal formulations have gained significant importance in skincare due to their safety, effectiveness, and minimal side effects compared to synthetic cosmetic products. The present work focuses on the formulation and evaluation of an herbal neem soap incorporating natural ingredients such as neem leaves, aloe vera gel, sandalwood powder, rose water, coconut oil, glycerin, and vitamin E. Neem (Azadirachta indica) is widely recognized for its potent antibacterial, antifungal, anti-inflammatory, and antiseptic properties, making it valuable for treating acne, infections, and various skin disorders. Aloe vera contributes moisturizing, soothing, and skin-repairing benefits, while sandalwood enhances skin brightness and reduces wrinkles. The soap was prepared using a traditional melt-and-pour saponification process followed by incorporation of herbal extracts and additives. The final product was evaluated for key parameters including physical appearance, spreadability, skin irritation, pH, moisture content, and safety tests to ensure quality and consumer acceptability. The prepared herbal neem soap exhibited good cleansing ability, mild and skin-friendly pH, pleasant natural fragrance, smooth texture, and stability. Overall, the study demonstrates that herbal neem soap is a safe, effective, and eco-friendly alternative to commercial synthetic soaps. The synergy of natural herbal ingredients provides enhanced antimicrobial action, improved skin hydration, and better compatibility for all skin types. This formulation supports the growing demand for natural, chemical-free, and sustainable cosmetic products.

KEYWORD: Herbal Neem Soap, Azadirachta indica, Neem, Aloe vera, Rose Water, Herbal Cosmetics, Antibacterial Activity, Skin Care, Saponification, Soap Formulation.

1. INTRODUCTION

Cosmetics are materials or mixtures of Materials used to be rubbed, poured, sprayed, or used On parts of the human body for the purpose of Cleaning, maintaining, increasing attractiveness, or Changing appearance, and are not classified as drugs. Currently, there are quite a lot of cosmetics on the Mark but most of these cosmetics contain several Compounds that have the potential to cause Interference with the barrier and skin structure. The cosmetics which are formulated using herbs having cosmetic action. In cosmetics, both natural and phytol ingredient are used natural product includes oils, extracts, secretion etc.

Scope is the product of a chemical process called saponification, which occur when acid in the form of animal or vegetable fats are combined with an alkali and produce the mixture of scope and glycerin. Quite simply it's a slippery[1] substance that produces bubble. It included secrets for hand milling your own scope from a store bought scope base with added ingredients to make a superior, quality bar. The addition to the basic white scope include fragrant essential oils just like lavender oil, Jasmin oil. colorant, herbs like neem leaves, all over, turmeric, sandalwood powder. The all ingredients common and readily available in grocery stores, natural food market, or easily grown in home garden There are also a variety of packaging and labeling ideas and plans for creaming unique and attractive gift collections with scope and bath produces that will delight family and friends, children and adults. Herbal scope is avoid harsh chemical and synthetic additives, making them suitable for sensitive skin. The use of essential oils and potential aromatherapy benefits.

NEEM LEAVES

There are a whole lot of ingredients that make it to your grandmother's beauty secret list — and one that probably tops the list is neem. For centuries, neem has been known for its medicinal properties that helps soothe a whole lot of skincare issues and help treat the skin. And that's why it is often found in bathing bars and soaps. The oil extracted from neem, which is used in these soaps, is known to hold antioxidant, antimicrobial, antiphrastic, and anti-inflammatory properties, making it a great skin healer. Basically it's the one-stop-solution to a whole lot of your skincare requirements. Here are a few neem soap benefits why it should be part of your shower routine.

Fights against Free Radical Neem is loaded with antioxidants that help fight free radicals and any sort of damage caused by them. On regular basis our body goes through a whole lot of trauma — from UV damage to exposure to pollution, heat, and dirt. All of these factors

combined trigger your body to react, resulting in damaged skin. One of the benefits of neem soap is that it repairs the skin and prevents any further damage.

ALOE VERA

One of the plant that can be used as natural ingredients in cosmetics is aloe Vera (Aloe Vera). Aloe Vera is very easy to get and has also been widely cultivated in Indonesia. Aloe Vera can be useful as a raw material for the pharmaceutical cosmetic industries, as well as raw material for health food, beverages, and medicines without containing chemical preservatives. The benefits of aloe Vera are very diverse, including as an antibiotic, antiseptic, antibacterial, antiviral, antiinfective, anti-inflammatory, and anti-swelling. Aloe Vera is effective in replacing damaged cells and improving skin[2] conditions because there are polysaccharides that work together with essential amino acids and protein breaking enzymes. Aloe Vera (Aloe Vera) comes from Africa and belongs to the Liliaceous family. This plant is widely found in Indonesia and easily inhabits tropical and subtropical climates. Plants such as cacti with this type of succulent contain a lot of fluid. Aloe Vera is a plant that can live at high temperatures or is grown as an ornamental plant in the yard. The characteristics of aloe Vera are spur shaped, thick, brittle, jagged edges or slightly pointed leaves in the form of small spines. The mottled surface is 15-36 cm long and 2-6 cm wide. Aloe Vera is excellent in the cosmetic field because it contains many nutrients that are good for the skin. Aloe Vera is made up of 95% water and 5% water. The rest consists of active ingredients such as essential oils, amino acids, minerals, vitamins, enzymes, and glycoproteins. The content of Vitamin C and Vitamin E in aloe Vera is very effective for tightening the skin. Aloe Vera also helps to nourish the hair, making it soft and shiny. These benefits are achieved by many of the key substances in aloe Vera, including vitamin B1, vitamin B2, vitamin B3, vitamin B6 vitamin C, choline, folic acid, glucose, mannose, aldopentose, and enzymes. Aloe Vera contains quite the complete nutrients that the body needs. Other aloe Vera content in vitamins A, B12, E, inositol, and folic acid.

The mineral content includes calcium (Ca), magnesium (Mg), potassium (K), sodium (Na), iron (Fe), zinc (Zn), and chromium. (cr). Traditional medicinal plant such as mango basil, almond, and neem has been recognized for their therapeutic properties and are commonly used in various culture for treating skin aliment.

This study aims for formulation of multipurpose soap by incorporate mango, teak, neem, almond Each of these ingredient have unique bioactive properties which are contributing in herbal soap Mango leaves have antimicrobial properties and also contributing to skin protection teak leaves are for antibacterial and anti-inflammatory effect almond leaves are for moisturizing effect while neem leaves are for antiseptic and antifungal The rationale behind combining these specific ingredient lies in their synergetic potential to enhance clean and skin regeneration by formulating a soap that give benefit of these herbal extract .This research will explore the preparation methods of multipurpose soap evaluate its potential benefit based on the properties of each ingredient and discuss safety consideration including usage and potential adverse effect additionally we will highlight the importance of quality control and sourcing of herbal ingredient to ensure the safety and efficacy of product.

This review seeks to achieve one paramount goal: an illustrative analysis of herbal soap products with regards to

1. The formulation techniques of herbal soaps.
2. The benefits and therapeutic properties of key herbal ingredients.
3. The evaluation of herbal soaps in terms of their cleansing and antibacterial efficacy.
4. The market trends and consumer preferences related to natural personal care products.[3]

Benefits of herbal cleanser: Helps reduce acne and dry skin. Reduces brown, white and itchy skin. Cleanses the skin and removes impurities from the skin. This cleanser contains important antioxidants that keep the skin moisturized.

USE OF SOAP

Treat acne antibacterial properties of neem fight acne causing bacteria which help in the treatment and prevention of acne.

- Tackles blackheads and whiteheads.
- Aloe Vera shows moisturizer it is moisture the skin without giving it a greasy feel. So it is perfect for anyone with an oily skin.
- It also fight sunburn oracle. This soap is mainly used all skin problem Herbal medicinal products are in greater demand than the synthetic ones because of many reasons

Lesser Side effects

Better safety and efficacy

Easily available

Better compatibility with additives

Potent therapeutic effect

Cost-friendly

Greater are for selection

No requirement of animal testing

Better compatibility with all types of skin

Disadvantage of herbal soa

- Variable Quality: Herbal soaps are available in a wide range of formulations, and the quality may vary. Some herbal soaps may contain lower quality ingredients or lack the desired efficacy, which can affect their performance.
- Shorter Shelf Life: Herbal soaps may have a shorter shelf life compared to synthetic soaps, as they do not typically contain preservatives. This means that they may spoil or become less effective over time.
- Higher Cost: Herbal soaps may be more expensive compared to synthetic soaps, as they often contain higher quality natural ingredients. This can make them less affordable for some consume.

2. Review of literature

1. Priya Sharma (2021)

Developed a herbal soap using azadirachta[4] indica (neem) leaf extract. The study showed strong antibacterial activity against staphylococcus aureus and E coli. Physicochemical tests such as pH, hardness, foamability and moisture content were within acceptable limits,

proving the formulation suitable for regular skin cleansing.

2. Ritu joshi and Kavita more (2022)

Prepared neem and aloe vera based herbal soap using the melt and pour method. Evaluation results indicated excellent foaming, mild pH, and high total fatty matter (TFM). The study concluded that herbal ingredients enhance the moisturizing and antibacterial properties of soap.

3. Snehal Patil (2022)

Formulated a neem leaf and tulsi extract soap with glycerin as a base. The formulation showed good antimicrobial pleasant appearance, and smooth texture, combination of neem and tulsi provided synergistic antibacterial and antioxidant benefits for skin care.

4. Ankita Nair (2023)

Conducted a comparative study between herbal neem soap and a commercial antibacterial soap. The neem soap showed similar cleansing efficiency but better skin compatability and lower irritation. The researcher recommended neem as a safe, natural alternative to synthetic soaps.

5. Aishwarya Kulkarni (2023)

Evaluated neem oil based soap formulations for antimicrobial and physicochemical properties. The results confirmed neem oil's significant inhibitory effect on Pseudomonas aeruginosa and staphylococcus aureus. The study highlighted that neem oil improves both cleansing and antiseptic quality of soaps.

6. Kanchan More and Priya Jagtap (2024)

Formulated a multi herbal soap containing neem, turmeric, and lemon extracts. The combination provided enhanced antibacterial and antioxidant effects. The soap maintained good hardness, pH balance, and stability throughout storage. It was conducted that neem based herbal soaps offer protection against skin microbes.

7. Neha Deshmukh (2024)

Prepared a natural neem soap using ethanolic neem extract and coconut oil base. The soap exhibited good foaming capacity, mild fragrance, and strong antibacterial potential. The researcher concluded that neem can be effectively incorporated in herbal cosmetics for maintaining healthy skin and preventing infections.

3. AIM AND OBJECTIVE

Aim: Formulation and Evaluation of Herbal Neem Soap.[5]

Objective

[1] Primary Objectives (Therapeutic & Skincare)

- **Antimicrobial Action:** To utilize neem's natural **antibacterial and antifungal** properties to cleanse the skin, help prevent and treat skin infections (like ringworm or athlete's foot), and reduce germs.
- **Acne Management:** To serve as a remedy for common skin problems, specifically **treating and preventing acne, pimples, and blemishes** by managing oil and fighting the bacteria that cause breakouts.
- **Soothing and Anti-inflammatory:** To **soothe skin irritation, rashes, and inflammation** associated with conditions like eczema, psoriasis, and dermatitis.
- **Skin Healing:** To aid in **healing minor cuts, wounds, and scrapes** due to neem's regenerative and anti-inflammatory qualities.
- **Cleansing and Detoxification:** To effectively **remove dirt, oil, and environmental pollutants** while purifying the skin.

[2] Secondary Objectives (Product Formulation & Quality)

- **Provide a Natural Alternative:** To formulate a soap that is **free from harsh synthetic chemicals** (like artificial colors, fragrances, and non-natural surfactants), offering a safer and more environmentally friendly alternative to commercial soaps.
- **Maintain Skin Health:** To create a soap that **maintains the skin's natural moisture balance** (often by including ingredients like neem oil, coconut oil, and glycerin) to prevent dryness and leave the skin soft and supple.
- **Quality Assurance:** To ensure the final soap product possesses **ideal physical and chemical characteristics**, such as:
  - Appropriate **pH** (non-irritant and skin-friendly).
  - Good **foaming** and cleansing ability.
  - Acceptable **hardness** and texture.

4. Plan of work[6]

Sr no	Work Plan/Activity	Details
1	Selection of ingredients	Choose suitable herbal ingredients such as neem, aloe vera, tulsi, turmeric, etc. Select base oils such as coconut oil, castor oil, palm oil.
2	Extraction of Herbal Soap	Prepare neem leaf extract using aqueous or ethanolic method. Filter, concentrate and store extract for formulation.
3	Formulation of Herbal Soap	Prepare soap using the saponification process.
4	Evaluation of prepared soap	Conduct physical evaluation (color, odor, hardness), Chemical Evaluation (pH, moisture content, TFM) and antimicrobial activity testing.
5	Conclusion & Report writing	Summarize results, draw conclusions and prepare final project report with references and future recommendations.

5. Drug and excipient profile

1. Neem leaves[7]

Scientific name: Azadirachta indica.

Family: Meliaceae.

Function: Neem reducing dark spots, scars and pigmentation.

Uses: Neem can help regulate oil production, making it beneficial for oily and acne –prone skin.

2. Aloe Vera Leaves

Scientific name: Aloe barbadensis Miller.

Family: Asphodelaceae.

Function: Help in skin repair and anti-aging.

Uses: Provide hydration soothing properties.

3. Sandalwood Powder[8]

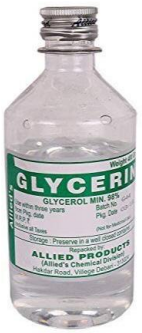
Scientific name: *Santalum album* L.

Family: Santalaceae.

Function: Enhances skin brightness.

Uses: Reduce wrinkles and signs of aging, Heals dry skin.

5. Glycerin



Category: Humectant and moisturizer.

Source: Derived from plant oils or fats.

Function: Retain's Moisture and soften skin.

Uses: Prevent's dryness and maintains skin hydration.

5. Rose Water[9]

Synonyms: Floral water.

Family: Rosacea.

Category : Perfuming and cooling agent.

Source: Distilled Water obtained from Rosa Damascena Petals.

Function: Provides fragrance and cooling effect.

Uses: Used in toners and masks for freshness and mild fragrance.

6. Soap Base

Category: Natural Soap base.

Source: Derived from natural oils and fats.

Function: Act as the main cleansing and foaming agent.

Uses: Used in making herbal, organic and handmade soaps.

7. Vitamin E Capsule

Vitamin Capsule can be used on the face to potentially moisturize, reduce the appearance of fine lines, and wrinkles, and improve skin texture.

- Moisturizes the skin.
- Acts as a cleansing agent.
- Reverses premature skin aging.
- Lightens dark spots.
- Prevent wrinkles.
- Help to skin glow.
- Helps exfoliate.

6. Methodology[11]

Materials and methods

- **List of Ingredients**

Ingredients	Functions
Neem leaves	Antiseptic and antifungal
Aloe vera leaves	Provide hydration shooting properties
Sandal wood powder	Brightens and evens skin tone
Vitamin E capsule	Mineraliurization and hydration Soth kin repair
Rose water	Balancing skin PH, Antiaging properties. Enhance Natural Glow
Coconut oil	As preservative, and reduce blemishes

- **Glassware and instruments**

Measuring cylinder (100 mL, 500 mL), Beaker (250 mL, 500 mL,) Glass funnel, Stainless Steel Bowl, Glass rod, Soap molds, Gloves, Goggles, Apron (for safety).

- **Method of preparation**

1) Preparation of Neem Paste

Fresh neem leaves were washed thoroughly, dried, and ground into a fine paste using a mortar and pestle or blender.

2) Extraction of Aloe vera Gel

The aloe vera leaf was peeled and the transparent gel was extracted carefully to avoid the yellow latex portion.

3) Mixing of Herbal Extracts

The prepared neem paste and aloe vera gel were mixed thoroughly in a clean beaker to form a uniform herbal blend.

4) Melting of soap base

The soap base was taken in a stainless-steel bowl and melted gently using a water bath to avoid overheating.

5) Incorporation of herbal ingredients[12]

Once the soap base melted completely, the neem-aloe mixture was added with continuous stirring to ensure even distribution.

6) Addition of other additives

Rose water, sandalwood powder, and vitamin E capsules contents were added sequentially to the molten soap mixture and stirred continuously until a homogenous consistency was achieved.

7) Molding

The prepared soap mixture was poured into pre-lubricated molds (lubricated with coconut oil to prevent sticking).

8) Cooling and solidification

The Molds were allowed to stand undisturbed at room temperature for about 12 hours to cool and solidify completely.

9) Demolding and storage

After complete solidification, the soaps were carefully removed from the molds and stored in a cool, dry place for curing and further evaluation.

7. Evaluation Test[13]

After the successful formulation of the herbal neem soap using neem and other excipients, the following evaluation tests will be carried out to assess the quality and performance of the prepared soap.

1) Physical Appearance:- To observe the color, odor & texture.

2) Spreadability Test:- To measure uniform application.

3) Skin Irritation Test:- To ensure safety and non irritancy.

4) pH Test:- To Assess Product Stability.

5) Moisture Content Test:- To Maintain Consistent Quality.

6) Safety and Sensitivity Test:

• **Patch Test:** conduct patch test on a small area of skin to check for any adverse.

8. CONCLUSION[14]

The herbal soap made from and neem leaves and aloe vera leaves and sandal wood power, vitamin e capsule, coconut oil, rose water is a natural product with several beneficial properties. It effectively cleanses, moisturizes and soothes the skin while being safe and gentle for regular use. The combination of these herbal ingredients provides a well-rounded skincare product that can address various skin concerns such as dryness, acne, and irritation. This soap offers a pleasant user experience with its natural fragrance and smooth lather, and its duration gives good value for use over time. For those seeking a natural alternative to commercial soaps, this herbal soap formulation provides a compelling option with its blend of nourishing and therapeutic.

The formulation and evaluation of herbal neem soap have successfully demonstrated the effectiveness of combining traditional herbal knowledge with modern soap-making techniques. Neem (Azadirachta indica), known for its antibacterial, antifungal, anti-inflammatory, and antiseptic properties, serves as the key active ingredient, offering numerous therapeutic benefits for skin care. Its bioactive compounds such as nimbin, azadirachtin, and quercetin contribute to maintaining skin health, preventing infections, and promoting a clear and balanced complexion.

During formulation, high-quality natural ingredients were carefully selected to ensure safety, efficacy, and eco-friendliness. The prepared herbal neem soap exhibited a smooth texture, pleasant natural fragrance, good foaming ability, and appropriate hardness, which are desirable qualities for consumer acceptance. The inclusion of neem extract not only enhanced the soap's cleansing action but also provided mildness and skin nourishment, making it suitable for regular use without causing dryness or irritation.

Quality control parameters such as moisture content, pH value, total fatty matter, foam height, and cleaning efficiency were evaluated to ensure the product meets the required cosmetic standards. The moisture content test played a vital role in determining the soap's stability and shelf life — ensuring that the product remains firm, resistant to microbial growth, and durable during storage. The pH value was found to be within the skin-friendly range, which minimizes irritation and maintains the natural acid–base balance of the skin.

The herbal neem soap, being free from harmful chemicals, synthetic detergents, and artificial preservatives, represents a sustainable and environmentally responsible approach to skincare.

Unlike commercial soaps that often contain harsh surfactants, this natural formulation promotes skin healing, reduces acne, and prevents microbial infections naturally. Moreover, it aligns with the growing consumer preference for natural, biodegradable, and cruelty-free cosmetic products.

In conclusion, the project highlights that herbal neem soap is a safe, effective, and eco-conscious alternative to synthetic soaps. Its formulation not only supports healthier skin but also contributes to the promotion of traditional herbal remedies in modern personal care. With proper standardization, large-scale production, and consumer education, herbal neem soap has the potential to become a commercially viable, therapeutic, and sustainable product in the herbal cosmetics market.

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