

## A Review Of Antifungal Herbal Scrub Soap

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### ABSTRACT

The objectives of this study to create and assess herbal antimicrobial scrub soap for cosmetic use that contained both fresh and dried paan leaf extracts. Paan leaf contains the antifungal and anti microbial, antibacterial activity. Additionally, to create a stable herbal antibacterial and antifungal cream that works and assess its antifungal, antibacterial, and physical qualities. The physical, rheological, antifungal, and antibacterial qualities of the prepared soap were assessed. Additionally, a stability study was conducted. This abstract looks at the ingredients and efficacy of a brand-new herbal antifungal scrub soap that combines the potent antifungal properties of neem, tulsi, aloe vera, rose water, poppy seeds and paan an anti-inflammatory and antimicrobial substance present in turmeric, vitamin E antioxidant and skin nourishment substances, strengthens the potent antifungal qualities of lavender essential oil high eugenol content. This study aims to formulate a antifungal scrub soap for the treatment of fungal diseases like superficial mycoses (pityriasis versicolor), cutaneous mycoses (tinea corporis), subcutaneous mycoses (sporotrichosis), systemic mycoses (histoplasmosis), opportunistic mycoses (candidiasis, aspergillosis).

**Keywords:** Anti-fungal , Anti-microbial, tulsi, Neem leaf, Aloe vera, reetha, paan leaf.

### INTRODUCTION

Because of their natural origin, safety, and therapeutic potential, herbal cosmetics have become a significant area in the field of cosmetology. In order to create formulations that effectively maintain and improve the health of the skin, hair, and body, these products are made with one or more plant-derived ingredients combined with appropriate excipients. Herbal cosmetics are thought to be safer than synthetic ones since they don't interfere with the body's regular physiological processes and have few negative effects.

Cosmetics are substances that are applied to the skin, face, hands, and other external parts of the human body with the intention of cleaning, beautifying, promoting attractiveness, and improving appearance without altering the structure or functions of the body. Based on how they are used, herbal cosmetics are divided into preparations for oral, hair, and skin care. These products can be used on a daily basis because they come in a variety of forms, such as soaps, creams, lotions, powders, gels, and scrubs.

Body scrubs and herbal soaps, among other herbal formulations, are essential for preserving skin health. Natural exfoliating agents found in herbal scrubs aid in the removal of dead skin cells, encouraging the growth of new cells and enhancing the texture and appearance of the skin. Smooth, soft, and radiant skin is the outcome of regular use of these products. Similar to this, herbal soaps have antimicrobial qualities, such as antibacterial and antifungal activities, which enable them to effectively prevent and treat a variety of skin conditions, including athlete's foot, fungal infections, acne, and dermatitis. To guarantee the quality, safety, and effectiveness of herbal cosmetic formulations, evaluation is crucial. During formulation development, a number of factors are evaluated, including appearance, spreadability, pH, irritability, and washability.

These factors aid in assessing the product's stability and topical application suitability. Because of their strong pharmacological qualities, medicinal plants like Neem (*Azadirachta indica*), Tulsi (*Ocimum sanctum*), Aloe vera (*Aloe barbadensis*), and Reetha

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(*Sapindus mukorossi*) are frequently used in herbal cosmetic preparations. Neem has immunomodulatory, anti-inflammatory, antimicrobial, and antioxidant properties. Tulsi is well-known for its anti-inflammatory, antimicrobial, and stress-relieving qualities. Aloe vera has wound-healing, calming, and moisturizing properties, while Reetha's saponin content makes it a natural cleanser.

Traditional medical systems like Ayurveda, which has been practiced for more than 5000 years and places a strong emphasis on natural healing, have historically relied heavily on plants. Growing awareness of the negative effects of synthetic chemicals has led to a notable increase in the use of herbal products in recent years. By lessening wrinkles, acne, pigmentation, oiliness, and dark circles, herbal cosmetics not only improve appearance but also improve skin health.

Herbal cosmetics, which combine traditional knowledge with scientific advancements for effective skin care and treatment, are therefore a promising, safe, and environmentally friendly alternative in contemporary cosmetology.

**Soap:-** Researchers have defined soap, a frequently used cleaning agent, in a variety of ways. The sodium or potassium salts of natural fatty acids, which are soluble in water and have cleansing qualities, are generally referred to as soap. The fact that these fatty acids usually have eight or more carbon atoms adds to their ability to effectively remove oil and dirt. Washing, bathing, and medical applications are just a few of the many uses for soaps.

The chemical structure of soap, where the hydrophilic carboxylate group and the hydrophobic hydrocarbon chain interact with water and grease, is primarily responsible for its cleansing properties. Soap molecules can emulsify oils and remove impurities from skin or fabric because of their dual nature.

To improve the qualities and functionality of soap formulations, different additives are added in addition to the basic ingredients. For instance, active pharmaceutical ingredients found in medicated soaps aid in the treatment of certain skin conditions like inflammation, infections, and acne. Moreover, some metals, like calcium, magnesium, and chromium, can create insoluble soaps that have other industrial uses

but are not used for cleaning. The kind of metal ion present determines the physical characteristics of soap, including its solubility and hardness. If the same fat or oil is used, soaps made from potassium salts are softer and more soluble than those made from sodium salts. On the other hand, soaps made of divalent metals such as iron, calcium, magnesium, or aluminum are not suitable for cleaning because they are insoluble in water. Soaps are used in a variety of fields in addition to household and personal hygiene. For example, animal feed formulations occasionally contain calcium soaps. Saponification is a chemical process that is typically used in the production of soap. This process creates glycerol and fatty acid salts, which make up soap, when triglycerides (fats or oils) react with a strong alkali like sodium hydroxide or potassium hydroxide.

#### **Anti-Microbial Soap :-**

Anti microbial herbal soap is a type of natural synthetic soap, by using different type of active plant materials. This soap is prepared from the natural plant extracted active ingredient that abilitly to kill the microorganisms.

Soap that prevent us from the foreign material or microbes it's prevent us from any disease.

#### **Advantages**

- Anti-fungal herbal scrub soap is natural, eco-friendly and biodegradable.
- It contains plant-based ingredients which are generally safe and have minimal side effects.
- Provides antifungal, antibacterial and anti-inflammatory activity.
- Offers dual action – cleansing of skin and removal of dead skin cells (exfoliation).
- Helps in preventing fungal infections such as ringworm, athlete's foot, and jock itch.
- Unclogs pores and improves skin hygiene.
- Makes skin smooth, clean and healthy.
- Herbal ingredients are easily available and cost-effective.

- Suitable for regular use and sensitive skin.

### Disadvantages

- Herbal formulations may show slow therapeutic action compared to synthetic drugs.
- Requires regular and long-term use for effective results.
- Standardization is lacking, so effectiveness may vary.
- Short shelf life due to absence of strong preservatives.
- May cause allergic reactions in some individuals.
- Not sufficient alone in severe fungal infections (needs medical treatment).
- Excessive scrubbing may cause skin irritation, redness or damage.
- Less effective in hard water conditions.

**Skin:-** Healthcare workers must have a thorough understanding of the composition and capabilities of human skin. In adults, the surface area of skin, also referred to as the cutaneous membrane, ranges from 1.2 to 2.2 m<sup>2</sup>. There are two types of skin: hairless skin, like the skin on the palms of hands and soles of feet, and hair-bearing skin, which covers most of the body.

Fungal skin infections are among the most common dermatological conditions affecting people of all age groups worldwide. These infections are primarily caused by dermatophytes, yeasts, and molds, leading to conditions such as athlete's foot, ringworm, and candidiasis. The increasing prevalence of such infections, along with the side effects associated with synthetic antifungal agents, has led to a growing interest in natural and herbal alternatives for skin care and treatment.

Herbal cosmetics have gained significant importance in recent years due to their safety, efficacy, and minimal side effects. These products are formulated using plant-based ingredients that possess therapeutic properties, making them suitable for both cosmetic and medicinal applications. Among various herbal formulations, herbal soaps and scrubs play a vital role

in maintaining skin hygiene and preventing microbial infections.

An anti-fungal herbal scrub soap is a multifunctional formulation that combines cleansing, exfoliating, and antifungal activities. The cleansing action helps in removing dirt, oil, and microorganisms from the skin surface, while the exfoliating agents eliminate dead skin cells, thereby enhancing skin renewal and improving the penetration of active ingredients. This dual action makes herbal scrub soaps particularly effective in controlling fungal growth and maintaining healthy skin.

Various medicinal plants such as Neem (*Azadirachta indica*), Tulsi (*Ocimum sanctum*), Aloe vera (*Aloe barbadensis*), betel leaf (*Piper betle*) and Reetha (*Sapindus mukorossi*) are commonly used in the preparation of anti-fungal herbal scrub soaps. Neem exhibits strong antifungal and antibacterial properties, while Tulsi provides antimicrobial and anti-inflammatory effects. Aloe vera contributes soothing and healing properties, and Reetha acts as a natural cleanser due to the presence of saponins. Betel leaves have excellent antifungal properties due to their high polyphenol content (especially chavicol and hydroxychavicol). They are beneficial as a paste or decoction for ringworm, athlete's foot, scabies, and other fungal skin infections. The synergistic effect of these ingredients enhances the overall effectiveness of the formulation. The preparation of herbal scrub soap typically involves the process of saponification, followed by the incorporation of herbal extracts and natural exfoliating agents. The final product is evaluated using various parameters such as pH, foamability, spreadability, skin irritation, and antimicrobial activity to ensure its quality, safety, and effectiveness.

Thus, anti-fungal herbal scrub soap represents a promising, natural, and eco-friendly approach for the prevention and management of fungal skin infections, while also promoting overall skin health and hygiene.

### Fungal Skin Diseases:-

One of the most prevalent dermatological conditions affecting people globally is fungal skin infections. The superficial layers of the skin, hair, and nails are invaded by fungi like dermatophytes, yeasts, and molds, which are the main cause of these infections.

They are more common in warm, humid climates where fungal growth and spread are encouraged.

**Common Fungal skin disease and causes-** Common types of fungal skin diseases include ringworm (*tinea corporis*), athlete's foot (*tinea pedis*), jock itch (*tinea cruris*), and candidiasis.

These conditions are typically characterized by symptoms such as itching, redness, irritation, inflammation, and scaling of the skin. If left untreated, fungal infections may spread to other parts of the body and lead to more severe complications.

**1. Ringworm-** *Tinea corporis*, the medical term for ringworm, is a common superficial fungal infection of the skin. Contrary to its name, dermatophytes—fungi—cause it rather than worms. This infection can affect different parts of the body and mainly affects the epidermis, the skin's outermost layer. These organisms thrive on keratin, a protein found in the skin, hair, and nails. When fungal spores adhere to the skin's keratinized layer, the infection starts. Enzymes like keratinases that the fungi produce break down keratin, enabling them to infiltrate and proliferate. Usually, the infection spreads outward to form distinctive ring-shaped lesions with inflamed edges and a clear center.

**2. Athlete's foot-** *Tinea pedis*, the medical term for athlete's foot, is a common fungal infection that mainly affects the skin of the feet, particularly the spaces between the toes. It is one of the most common dermatophytic infections in the world, and people who are exposed to warm, humid environments are more likely to get it. These fungi thrive on keratin present in the outer layer of the skin. When fungal spores come into touch with the skin and adhere to the keratinized layer, the infection starts. In order to infiltrate and proliferate, the fungus manufacture enzymes like keratinases that break down keratin. Visible skin lesions, irritation, and inflammation follow.

**3. Jock itch-** Jock itch, medically known as **Tinea cruris**, is a common fungal infection that affects the groin region, inner thighs, and surrounding skin areas. It is more frequently observed in males and individuals living in warm and humid climates. The infection is caused by dermatophyte fungi and is often

associated with excessive sweating and poor hygiene. Jock itch is mainly caused by dermatophytes

**4. Candidiasis-** A common fungal infection called candidiasis is brought on by yeast from the genus *Candida*, most frequently *Candida albicans*. The lips, skin folds, genital area, and nails are among the moist parts of the body that are affected. An overgrowth of *Candida*, which is typically found in trace levels on the skin and mucous membranes, causes the infection. *C. albicans* exists as a normal commensal organism on the skin and mucous membranes. Under favorable conditions, it multiplies rapidly and invades superficial tissues. It can switch from a yeast form to a more invasive hyphal form, leading to tissue damage, inflammation, and infection.

#### Drug profile:-

##### 1. Neem

Biological Name – *Azadirachta indica*

Common Name – Neem, Nimba, margosa tree

Synonyms – *Melia Azadirachta*, indian Lilac

Kingdom – Plantae

Family –Maliaceae

Genus - *Azadirachta*

Species – *indica*

Properties - Antifungal, antibacterial, anti-inflammatory, antiseptic



**Fig: Neem**

##### 2. Tulsi

Biological Name – *Ocimum sanctum*

Common Name – Holy Basil, Tulsi

Synonyms – Sacred Basil, Tulasi

Kingdom – plantae

Family – Lamiales

Genus - *Ocimum*

Species – *Santum*

Order – Lamiales

Properties - Antimicrobial, antifungal, anti-inflammatory, antioxidant



fig: Tulsi

### 3. Aloe Vera

Biological Name – *Aloe barbadensis*

Common Name – Aloe vera

Synonyms – Ghritkumari

Kingdom – Plantae

Family – Asphodelaceae

Genus - *Aloe*

Species – *barbadensis*

Order – Asparagales

Properties - Soothing, moisturizing, healing, anti-inflammatory



Fig: Aloe Vera

### 4. Reetha

Biological Name – *Sapindus mukorossi*

Common Name – Soapnut

Synonyms – Indian Soapberry

Kingdom – Plantae

Family – Sapindaceae

Genus – *Sapindus*

Species – *mukorossi*

Order – Sapindales

Properties - Natural cleanser, antimicrobial, gentle on skin



Fig: Reetha

### 5. Paan Leaf

Biological Name – *Piper betle*

Common Name – Betel Leaf

Synonyms – Paan

Kingdom – Plantae

Order – Piperales

Family – Piperaceae

Genus – *Piper*

Species – *betle*

Properties – Antifungal, antiseptic, antioxidant, antimicrobial



**Fig: Paan leaf**

## 1. Turmeric

Biological Name – *Curcuma longa*

Common Name – Turmeric

Synonyms – Haldi, Indian Saffron

Kingdom – Plantae

Order – Zingiberales

Family – Zingiberaceae

Genus – *Curcuma*

Species – *longa*

Properties – Antifungal, antibacterial, anti-inflammatory, antioxidant, wound healing



**Fig: Turmeric**

## 2. Lavender Essential oil

Biological Name – *Lavandula angustifolia*

Common Name – Lavender Oil

Synonyms – English Lavender, Lavandula oil

Kingdom – Plantae

Order – Lamiales

Family – Lamiaceae

Genus – *Lavandula*

Species – *angustifolia*

Properties – Antifungal, antimicrobial, anti-inflammatory, soothing, aromatic

## 8. Poppy seeds

Biological Name – *Papaver somniferum*

Common Name – Poppy Seed

Synonyms – Khuskhus

Kingdom – Plantae

Order – Ranunculales

Family – Papaveraceae

Genus – *Papaver*

Species – *somniferum*

Properties – Exfoliating agent, skin smoothing, mild cleansing, moisturizing



**Fig: Poppy Seed**

## DISCUSSION :-

In this study, natural ingredients like neem, tulsi, turmeric, aloe vera, paan leaf, lavender oil, and poppy seeds are used to formulate and evaluate an anti-fungal herbal scrub soap. These components can be used to treat common skin infections because of their well-known antimicrobial, antifungal, anti-inflammatory, and skin-soothing qualities.

The formulation is gentle on the skin and has a greater moisturizing effect thanks to the use of a glycerin soap

base. Herbal ingredients like neem and turmeric are important in preventing the growth of fungi, and tulsi and paan leaf also have antimicrobial properties. Aloe vera has calming and restorative properties that lessen irritation and encourage skin repair. While poppy seeds function as natural exfoliants, removing dead skin cells and improving skin texture, lavender essential oil adds fragrance and has antifungal properties.

In addition to improving skin hygiene, the cleansing and exfoliating action helps prevent fungal infections like jock itch, ringworm, and athlete's foot. This herbal formulation has fewer adverse effects, is safer, and is more environmentally friendly than synthetic products.

Nevertheless, some restrictions were noted. For noticeable effects, herbal products may act more slowly and need to be used frequently. The consistency and effectiveness of the formulation may also be impacted by variations in the quality of the herbal ingredients and a lack of standardization. Sensitive people may also experience mild skin irritation from excessive scrub particle use.

With the added advantages of safety and affordability, the anti-fungal herbal scrub soap shows encouraging results as a natural substitute for preserving skin health and treating mild fungal infections.

## CONCLUSION

Anti-fungal herbal scrub soap represents an effective and natural approach for maintaining skin hygiene and preventing fungal infections. The formulation combines the benefits of herbal ingredients such as neem, tulsi, aloe vera, turmeric, paan leaf, and lavender oil, which possess significant antifungal, antimicrobial, and anti-inflammatory properties.

The dual action of cleansing and exfoliation helps in removing dirt, excess oil, and dead skin cells, thereby reducing the chances of fungal growth and improving overall skin health. In addition, natural exfoliants like poppy seeds enhance skin smoothness and promote better penetration of active ingredients.

Compared to synthetic formulations, herbal scrub soaps are safer, eco-friendly, and associated with fewer side effects. However, limitations such as

slower action, lack of standardization, and reduced effectiveness in severe infections should also be considered.

Overall, anti-fungal herbal scrub soap can be considered a promising, cost-effective, and sustainable alternative for the prevention and management of common fungal skin diseases, while promoting healthy and clear skin.

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