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Sona Mariam Panicker
Assistant professor, Department of Pharmacognosy, The Oxford College of Pharmacy, Hongasandra, Bangalore, Karnataka, India

Shaha R
The Oxford College of Pharmacy, Hongasandra, Bangalore, Karnataka, India

Corresponding Author:
Sona Mariam Panicker
Assistant professor, Department of Pharmacognosy, The Oxford College of Pharmacy, Hongasandra, Bangalore, Karnataka, India

Herbal solutions for skin diseases: Natural remedies for healing

Sona Mariam Panicker and Shaha R

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Abstract
The human skin, being the body's outermost covering, is its largest and most multifunctional organ. It serves as the first protective barrier while performing vital sensory and metabolic roles. The skin connects humans with their surroundings and safeguards the internal organs, bones, and muscles. Since ancient times, plants have been used for therapeutic purposes. Herbal remedies are generally affordable, safe, and serve as valuable sources for developing synthetic drugs. Apart from its role in health, skin contributes significantly to personal appearance and beauty. In herbal formulations, plants can be used individually or in combination with other natural ingredients such as animal products or metallic ashes. However, more than half of the medicinal plants used for treating dermatological conditions grow in forest ecosystems, making them vulnerable to deforestation and urbanization. Hence, the conservation of these plants and the promotion of research on their dermatological uses are crucial. Given the wide variety of skin disorders and the lengthy treatments they often require, it is essential to evaluate therapeutic outcomes carefully. Skin conditions demand early diagnosis and appropriate care to prevent complications.

Keywords: Skin diseases, Herbal medicine, Natural treatment, Synthetic drug alternatives, Physiology of skin

Introduction
The skin, the largest organ of the human body, plays a vital defensive role while enabling sensory perception and metabolic activity. It protects deeper tissues such as muscles and bones from external harm and also contributes significantly to physical appearance and emotional well-being. Healthy skin is a reflection of overall health, whereas skin diseases can affect individuals of all ages and cause physical discomfort and psychological distress.
The use of medicinal plants to manage skin disorders dates back to early human civilization. Herbal treatments are not only cost-effective but also relatively safer compared to synthetic alternatives. While conventional drugs like corticosteroids, antibiotics, and antifungals often provide symptomatic relief, phytotherapy offers holistic and long-term solutions. Increasingly, dermatologists recognize the therapeutic potential of herbal drugs, though their use requires patience for sustainable results. Despite the availability of quick-acting synthetic ointments, long-term reliance on them may lead to side effects, emphasizing the importance of herbal remedies.

Causes of Skin Diseases
The skin not only contributes to beauty but also protects the body from various harmful influences. Common factors that lead to skin damage include:

- Microbial infections
- Chemical exposure
- Physical trauma or shock
- Extreme temperatures
- Dehydration or excessive water loss
- Ultraviolet radiation

Severe damage may result in scar formation, often leading to discoloration or pigmentation issues.

Types of Skin Disorders
Skin disorders are among the most common health issues, with over a thousand known conditions. However, they can be grouped into several main categories:

1. Rashes
Rashes are inflamed or irritated patches of skin, often resulting from allergies, infections, or blocked pores. Common examples include acne, eczema, dermatitis, and psoriasis.

2. Viral Infections
These arise when viruses penetrate the outer skin layers, such as in herpes, shingles, warts, and viral exanthems like chickenpox and measles.

3. Bacterial Infections
Caused mainly by *Staphylococcus* and *Streptococcus* species, bacterial infections such as folliculitis, cellulitis, and Lyme disease may require antibiotic therapy.

4. Fungal Infections
Superficial fungal infections like ringworm, athlete's foot, and jock itch affect the skin, nails, or hair. In immunocompromised individuals, these infections may become systemic.

5. Parasitic Infections
Skin infestations by lice or scabies mites lead to itching and irritation.

6. Trauma
Cuts, burns, or wounds compromise the skin's protective barrier, increasing infection risk.

7. Tumors and Cancers
Abnormal cell growth may result in benign or malignant lesions. Skin cancer, particularly due to ultraviolet exposure, is the most prevalent cancer worldwide.

8. Pigmentation Disorders
Changes in melanin production can cause hyperpigmentation (e.g., freckles, melasma) or hypopigmentation (e.g., vitiligo).

9. Miscellaneous Conditions
Wrinkles, rosacea, and varicose veins are examples of structural or vascular skin disorders.

Conventional Treatments
Conventional therapies include both topical and oral agents such as:

- **Topical:** antibiotics, antifungals, corticosteroids, coal tar, benzoyl peroxide, salicylic acid, retinoids, and anthralin.
- **Oral:** antibiotics, antifungals, antivirals, corticosteroids, immunosuppressants, and biologic agents.

n herbal cosmetics and therapeutics, plants may be employed individually or as multi-herbal blends. Based on composition, formulations can include:

a) Single herb
b) Combination of herbs
c) Herbs with animal-derived products
d) Herbs with metallic preparations (ashes)
e) Herbs mixed with both animal products and metals
f) Herbs combined with animal extracts or other natural components

Below are some widely used herbal drugs effective in the management of various skin disorders.

GARLIC (*Allium sativum*, Family: Liliaceae)
Biological Source
The drug consists of the bulbs of *Allium sativum*, belonging to the family Liliaceae.

Phytochemical Constituents

- Alliin
- Allicin
- Carbohydrates
- Proteins
- Mucilage
- Volatile oils
- Phosphorus, Iron, and Copper

Therapeutic Uses

- Acts as a carminative, expectorant, disinfectant, and rubefacient
- Exhibits antibacterial and antifungal properties

Role in Skin Disorders
Experimental studies on Swiss albino mice have shown that garlic exhibits strong chemopreventive effects against skin carcinogenesis induced by 7,12-dimethylbenz(a)anthracene (DMBA). Administration of garlic both before and after carcinogen exposure significantly reduced the number and size of papillomas. Its protective role is thought to be associated with activation of cellular defense mechanisms and antioxidant activity.

Aloe Vera (*Aloe barbadensis*, Family: Liliaceae)
Biological Source
Aloes are obtained from the dried latex of *Aloe barbadensis Miller* (Curacao aloes), *Aloe perryi Baker* (Socotrine aloes), and *Aloe ferox Miller* (Cape aloes).

Phytochemical Constituents

- Aloin, Aloe-emodin
- Barbaloin, Isobarbaloin
- Aloetic acid, Aloesone
- Saponins, Resins, Choline
- Chrysophanic acid and Galacturonic acid

Therapeutic Uses

- Laxative and carminative
- Anti-inflammatory and wound healing agent
- Used in skin care and cosmetic formulations

Role in Skin Disorders
Aloe vera gel is well recognized for its ability to soothe irritated skin, reduce inflammation, and promote healing. Clinical studies report improvement in psoriasis plaques with topical application of 0.5% aloe cream for four weeks. The gel is also beneficial in burns, frostbite, and radiation-induced skin injury due to its antimicrobial and regenerative effects.

Neem (*Azadirachta indica*, Family: Meliaceae)
Biological Source
The drug is derived from the aerial parts of *Azadirachta indica*.

Phytochemical Constituents

- Azadirachtin, Nimbin, and Nimbidin
- Salanin, Meliantriol
- Nimbosterol, Kaempferol, and Deacetylazadirachtinol

Therapeutic Uses
- Natural insect repellent and insecticide
- Exhibits antimicrobial, antifungal, and spermicidal activity

Role in Skin Disorders
Neem leaf extract is traditionally applied on boils and blisters for its antiseptic action. Experimental research demonstrated that oral administration of aqueous neem leaf extract in DMBA-induced skin tumor models significantly inhibited tumor development, indicating its chemopreventive effect. Moreover, neem is a key ingredient in herbal anti-acne formulations that effectively inhibit *Staphylococcus epidermidis* and *Propionibacterium acnes*.

***Cannabis sativa* (Family: Cannabinaceae)**
Biological Source
Obtained from the dried flowering tops of the cultivated female plant *Cannabis sativa Linn.*

Phytochemical Constituents
- Δ^9-tetrahydrocannabinol (THC)
- Cannabidiol (CBD)
- Cannabinol, Cannabichromene
- Choline, Trigonelline
- Volatile oils

Therapeutic Uses
Acts as a sedative, analgesic, and narcotic

Role in Skin Disorders
Hemp seed oil derived from *C. sativa* is widely used to manage skin conditions such as eczema, psoriasis, seborrheic dermatitis, and acne rosacea. Its high content of essential fatty acids helps restore skin barrier function and reduce inflammation. Topical application of crushed cannabis leaves is also reported to relieve pain and itching in scabies and minor wounds.

Saffron (*Crocus sativus*, Family: Iridaceae)
Biological Source
The drug consists of the dried stigmas and styles of *Crocus sativus Linn.*

Phytochemical Constituents
- Crocin and Crocetin
- Picrocrocin
- Protocrocin

Therapeutic Uses
- Used as a stimulant, coloring and flavoring agent
- Exhibits antispasmodic and emmenagogic properties

Role in Skin Disorders
Saffron has demonstrated chemopreventive potential in DMBA-induced skin carcinoma models in mice. Its antioxidant compounds help inhibit the development and progression of skin papillomas. Additionally, saffron is traditionally used to enhance complexion and manage psoriasis symptoms.

Turmeric (*Curcuma longa*, Family: Zingiberaceae)
Biological Source
Derived from the dried rhizomes of *Curcuma longa*.

Phytochemical Constituents
- Curcuminoids (Curcumin)
- Volatile oils and resins
- Starch and monoterpenes

Therapeutic Uses
- Used as a spice, coloring agent, and cosmetic ingredient
- Possesses antimicrobial, antioxidant, and anti-inflammatory properties

Role in Skin Disorders
Studies on mice have shown that topical application of curcumin significantly reduces tumor formation in DMBA-induced skin cancer models. Turmeric is also known for its skin-lightening and anti-aging effects and is used widely in face packs and creams for its natural glow-enhancing properties.

Red Cabbage (*Brassica oleracea*, Family: Brassicaceae)
Biological Source
Leaves of *Brassica oleracea* var. *capitata rubra*.

Phytochemical Constituents
- Anthocyanins and flavonoids
- Phenolic acids and nitrates

Therapeutic Uses
- Acts as an antioxidant and anti-inflammatory agent
- Boosts immunity and reduces risk of cancer and osteoporosis

Role in Skin Disorders
Red cabbage extract has shown promising results in reducing tumor formation and improving skin health due to its high antioxidant and detoxifying potential.

Conclusion
Medicinal plants hold immense promise in the treatment of various skin ailments. In India, over 80% of the population relies on herbal-based remedies due to their accessibility, safety, and affordability. Compared to synthetic drugs, herbal treatments offer milder side effects and sustainable benefits. However, rapid deforestation and habitat destruction threaten the availability of these valuable resources. Therefore, conservation and scientific validation of medicinal plants are crucial for future dermatological therapies.
To enhance patient outcomes, dermatology must incorporate accurate assessment tools and promote awareness of natural treatments. With continued research and responsible use, herbal medicine can play a vital role in managing both minor and chronic skin disorders.

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