Journal of Population Therapeutics & Clinical Pharmacology

RESEARCH ARTICLE
DOI: 10.53555/jptcp.v31i1.4441

COMPLETE REVIEW ON TREATMENT OF PSORIASIS WITH EXPLORATION OF HERBAL DRUG'S POTENTIAL

Sakshi Kaneria[1*], Ms. Purvi Ramanuj[2], Dr. Pragnesh Patani[3]

[1*]Student, Khyati College of Pharmacy, Palodia, Ahmedabad
[2]Associate Professor, Khyati College of Pharmacy, Palodia, Ahmedabad
[3] Principal, Khyati College of Pharmacy, Palodia, Ahmedabad

[*]**Corresponding Author:** Sakshi Kaneria
[*]Student, Khyati College of Pharmacy, Palodia, Ahmedabad, Email: sakshikaneria@gmail.com

Abstract
Psoriasis is an immune-mediated disease with an unclear cause marked by inflammation cause by dysfunction in the immune system, which results in inflammation in various parts of the skin. It is mainly characterized by activation of T-cell (T-lymphocyte), abnormal increase in keratinocyte, local vascular changes and stimulation of the neutrophil. There are a lot of therapies used to treat psoriasis including topical, systemic and phototherapy but none of them is able to cure the disease completely, inhibiting the long-term serious side effects for the human body. In comparison to these, herbal therapies play an important role for the treatment of psoriasis. This review report summarizes the recent developments showing potential of herbal therapy for treatment of psoriasis along with future prospect in the field of traditional treatment of psoriasis.

Figure:1 Structure of psoriasis.

INTRODUCTION

Psoriasis represents an autoimmune, never ending inflammatory disease that affects the skin and has a powerful hereditary component. It is distinguished by continuous inflammation, which results in uncontrolled keratinocyte growth and differentiation. In accordance with the International Psoriasis Day Collaboration, psoriasis affects 125 million individuals globally, or around 2–3% of the population. According to research, psoriatic arthritis affects 10–30% of psoriasis sufferers. Psoriasis

impacts on sufferers' quality of life. The pathophysiology of psoriasis is still unknown, but it is said to be a T-cell-triggered disorder because of the presence of T-helper cells inside the psoriatic state.[1]

1.1 CAUSES OF PSORIASIS

The causes of psoriasis stem from a range of environmental factors. These encompass stress, low calcium levels (hypocalcaemia), infections like streptococcal pharyngitis, physical trauma, such as cuts, surgical procedures, and abrasions, certain medications like beta blockers, lithium, antimalarials, and systemic corticosteroids. Additionally, habits like smoking and alcohol consumption contribute to psoriasis. Moreover, factors like higher body mass index (BMI), swift weight fluctuations, deficiency in vitamin D, and tobacco usage are also linked to heightened psoriatic inflammation.[2]

1.2 GENERAL SYMPTOMS

The typical indications of this condition encompass:

• Areas of dense, reddened skin covered by silvery-white scales that provoke itching or a burning sensation, commonly found on the elbows, knees, scalp, torso, palms, and the undersides of the feet.

• Dry, fissured skin that causes itching or may lead to minor bleeding. • Nails that are thickened, ridged, and marked by depressions.[3]

1.3 TYPES OF PSORIASIS

Psoriasis exists in various forms, including:

1. **Plaque psoriasis:** Plaque psoriasis stands as the prevalent form, accounting for 80% to 90% of psoriasis cases. Raised red patches, known as plaques, develop, covered by a white accumulation of deceased skin cells termed scales. These plaques typically emerge on the knees, elbows, scalp, and lower back, frequently causing itchiness.[4]
2. **Inverse psoriasis:** This type emerges within skin folds like the armpits, belly button, and beneath the breasts. It results in delicate plaques lacking scales. [5]
3. **Guttate psoriasis:** Following a streptococcal infection, guttate psoriasis may manifest. It displays as small, red, teardrop-shaped scaly patches, often affecting youngsters and young adults.[6]
4. **Pustular psoriasis:** Pustular psoriasis showcases tiny pus-filled bumps atop plaques. It is an immune-mediated systemic skin condition characterized by yellowish pustules on a reddened base, presenting in diverse clinical forms and distribution patterns. This type is considered a variation of psoriasis vulgaris.[7]
5. **Erythrodermic psoriasis:** A severe form affecting over 90% of the skin's surface, leading to extensive skin discoloration and shedding.[8]
6. **Sebopsoriasis:** Typically observed on the face and scalp, it presents as bumps and plaques with a greasy, yellowish scale. It shares characteristics of both psoriasis and seborrheic dermatitis.[9]
7. **Nail psoriasis:** This form causes alterations in skin colour, pitting, and changes to the fingernails and toenails.[10]

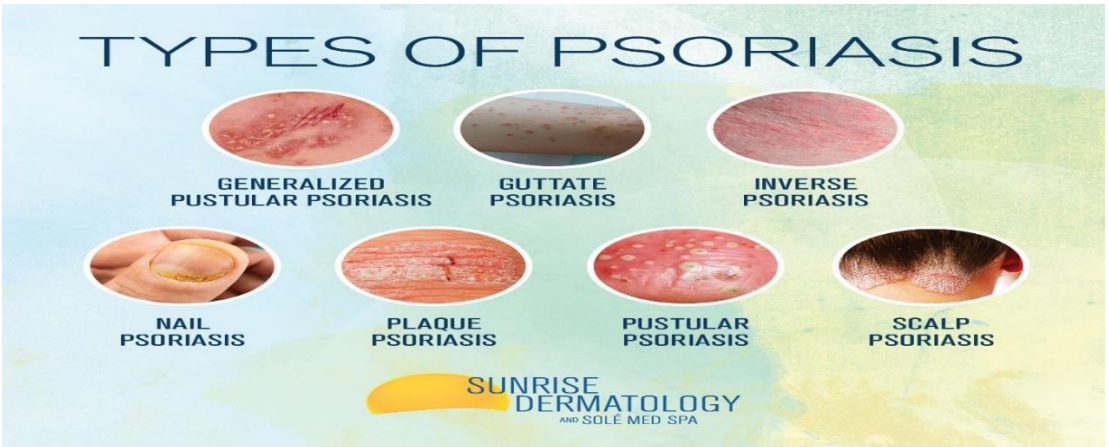

Figure:2 Types of psoriasis.

1.4 WHICH PART OF BODY DOES PSORIASIS AFFECT?

Psoriasis rashes can manifest on any part of the body. It is prevalent on:

- Elbows and knees.
- Facial area and within the oral cavity.
- Scalp.
- Fingernails and toenails.
- Genital region.
- Lower back.
- Palms and soles of the feet.

For most individuals, psoriasis is limited to a small skin area. However, in severe instances, the plaques can merge, encompassing a significant portion of the body. [11]

2. PATHOPHYSIOLOGY

Psoriasis's underlying biological process involves activated T-cells entering the skin and triggering the excessive growth of keratinocytes. This disruption in the normal turnover of skin cells leads to the development of thickened patches. Additional characteristics include the overgrowth of the outer skin layer and the accumulation of abnormal keratinocytes. Furthermore, there's a lack of proper lipid secretion by skin cells, leading to the recognizable flakiness and scaling seen in psoriasis.[12]

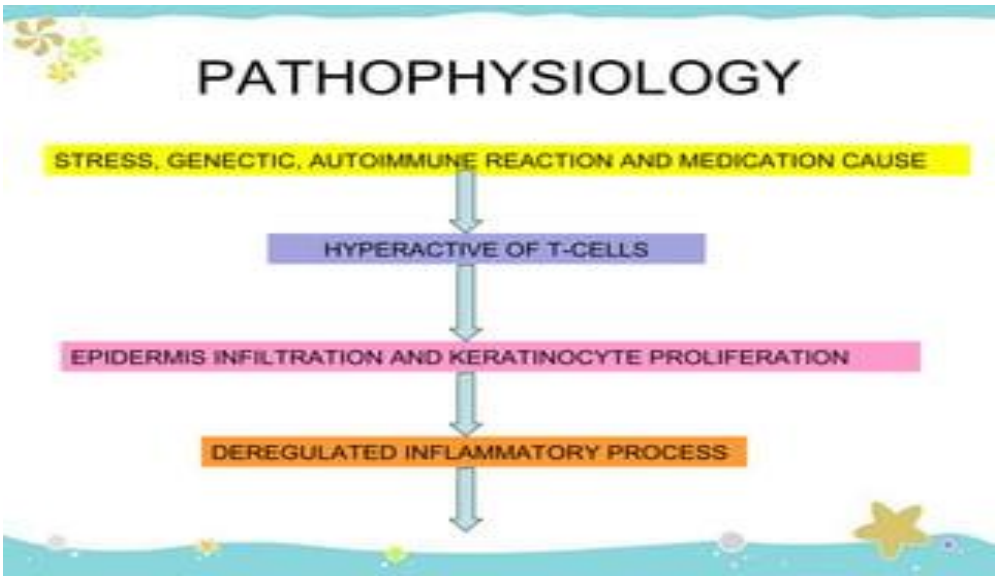

Figure:3 Pathophysiology of psoriasis.

3. TREATMENT

The Psoriasis Area Severity Index (PASI) is a commonly utilized tool for gauging the severity of psoriasis and gauging the effectiveness of treatments. For mild to moderate cases, topical treatments are employed. Emollients and moisturizers can enhance the skin's protective function and maintain moisture in the outermost skin layer. Initial topical treatments include substances like coal tar, dithranol, corticosteroids, vitamin D analogs, and retinoids. Phototherapy has shown the most favourable outcomes in treating guttate psoriasis. For cases that cover a large area, impact the nails, or involve psoriatic arthritis, systemic medications are employed. Potential choices encompass methotrexate, retinoids, cyclosporine, and fumarates. Regular monitoring of blood, liver function, and kidney function is essential for patients undergoing systemic treatment. Intensive treatment using topical corticosteroids is necessary for managing ocular psoriasis. Individuals with psoriasis should steer clear of any skin injuries to prevent triggering the Kobner phenomenon. Moreover, they should stay away from beta-blockers, chloroquine, or NSAIDs. Alcohol consumption should also be avoided due to the potential for developing fatty liver. [13]

4. ANTIPSORIATIC EFFECT OF HERBAL PLANTS

Numerous herbal preparations are utilized worldwide for treating psoriasis. Medicinal plants are significant in pharmaceutical studies and drug creation due to their benefits, which include minimal side effects, widespread accessibility at lower expenses, and patient acceptance.[14]

4.1 MEDICINAL PLANTS USED IN THE TREATMENT OF PSORIASIS:

1. Botanical name: *Curculigo orchioides*
Family: Hypoxidaceae
Common name: Thazhambu, Fragrant screw pine, Screw pine, Screw tree, Umbrella tree-plant.
Active Constituents: Flavonoids, steroidal saponins, alkaloids, polysaccharides.
Mechanism of action: The specific mechanism of action of thalampoo (Curculigo orchioides) for treating scalp psoriasis is not fully understood and may involve various factors.[15]

2. **Botanical name:** *Acorus calamus*
Family: Acoraceae
Common name: calamus root, sweet flag and vasambu
Active Constituents: essential oils, sesquiterpenes, phenolic compounds.
Mechanism of action: The mechanism of action of the "vasambu" plant (Acorus calamus) is complex and involves several bioactive compounds that contribute to its potential therapeutic effects. While the exact mechanisms are not fully understood and more research is needed.[16]

3. Botanical Name: *Aloe barbadensis Miller*
Family Name: Liliaceae.
Common Name: Aloe vera.
Active Constituent: Lignin.
Mechanism of action: Lignin is responsible for curing psoriasis, which majorly acts through penetration mechanism that allows AV to penetrate into inner skin layers.[17]

4. Botanical Name: *Azadiracta indica* [18]
Family Name: Meliaceae.
Common Name: Neem.
Active Constituent: Azadirachtin.
Mechanism of action: Azadirachtin penetrates in the deep layer of skin to heal the disease where vitamin E and omega 6 and 9 fatty acids of Neem oil exert a moisturizing effect on skin and help in reduction of the scales and dryness.[19]

5. Botanical name: *Syzygium aromaticum*
Family: Myrtaceae
Common name: Cloves
Active constituents: Eugenol, acetyleugenol, flavonoids, tannins, gallic acid
Mechanism of action: Cloves (Syzygium aromaticum) are known for their potential anti-inflammatory, antioxidant, and immune-modulating properties, which could have implications for managing certain aspects of psoriasis.[20]

6. Botanical name: *Curcuma longa*
Family: Zingiberaceae
Common name: Turmeric
Active constituents: Curcuminoids, curcumin, turmerones, volatile oils.
Mechanism of action: Curcumin inhibits nuclear factor kappa B, group of proteins, which regulates inflammation during psoriasis. It also accelerates healing of skin and increases its regenerating potential. Tumour necrosis factor alpha and interleukin are important proteins during inflammation

of psoriasis. Curcumin effectively inhibits the activity of these proteins and inhibits the activation of other biochemical pathways that could lead to the advancement of the disease.[21]

5. CONCLUSION

This review strongly suggests that naturally sourced compounds are poised to play a significant role in upcoming treatments for psoriasis. The article has provided a concise overview of certain compounds and plants that have been investigated for their potential in alleviating psoriasis symptoms. Phytochemicals have been documented to offer numerous health advantages, and continuous investigation is underway to ascertain their physiological impacts. The traditional utilization of natural compounds for addressing psoriasis is cost-effective due to plant availability and uncomplicated preparation methods. Nonetheless, the commercial utilization of these natural compounds in psoriasis treatment might lead to resource depletion and challenges in maintaining consistent quality without adulteration. Conversely, the utilization of synthetic drugs has led to various unwanted effects, including the emergence of psoriasis. In recent times, research within this domain has presented diverse therapeutic avenues for managing psoriasis. Among these, the employment of herbal medicine is an expanding approach. Certain herbs have demonstrated their potential in mitigating psoriasis, as elaborated in this analysis. However, herbal treatment remains confined to a specific subset of psoriasis patients currently. Herbal extracts could potentially complement synthetic medications in the management of psoriasis. To guarantee the safety and effectiveness of psoriasis treatment, the standardisation of herbal medicines necessitates regulatory requirements and quality control processes. To assess the therapeutic efficiency of these natural chemicals, more studies with a larger sample size are necessary. Fresh plant resources should also be examined in this region.

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