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Review Article

A Review On Psoriasis Demystified: Types, Symptomes And Contemporary Treatment Apporches

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ABSTRACT

The illness known as psoriasis is defined by the appearance of papules and plaques on the skin's surface that vary in size, shape, and severity. Psoriasis lesions are different from these other conditions and are often red, round, well-defined papules or plaques with a dry, grey or silvery-white scale. Furthermore, the lesions are usually symmetrically distributed in the body folds, lumbosacral region, knees, elbows, and scalp [1]. Although it can start at any age, people between the ages of 50 and 60 are the most frequently affected. It is an autoimmune disorder. In addition to specific immunological molecules like TNF-, IL-12, IL-23, IL-17, and other molecules that can aid in the pathogenesis of psoriasis, individual cells (such T cells) have been discovered to have an obvious role in the disease's pathogenesis. Thus, over the course of the last 20 years, researchers have developed chemical medications that specifically target these molecules or cells, thereby preventing the disease from developing. Current treatments only reduce symptoms, not cure. Chemical medications include efalizumab, secukinumab, astekinumab, adalimumab, and alefacept [2]. It was discovered that these chemical drugs have long-term side effects that can cause defects in the patient's body. Curcuma amada, Humulus lupulus and Hypericum perforatum turned out to be the most effective plant extracts [3].

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INTRODUCTION

An inflammatory, persistent autoimmune condition with a strong genetic component that affects the skin is called psoriasis. It is characterized by ongoing inflammation that leads to unchecked keratinocyte development and proliferation. The International Psoriasis Day Collaboration estimates that 125 million people worldwide roughly 2-3% of the population are affected with psoriasis. 10-30% percent of people with psoriasis also have psoriatic arthritis, according to studies. Psoriasis negatively impacts the quality of life for those who have it. Even if the pathophysiology of psoriasis is yet unknown T cells, dendritic cells, and cytokines including interleukin-23, interleukin-17, and tumor necrosis factor are among the immune system components and pathways that cause psoriasis, which is categorized as an autoimmune disease. It is the most prevalent hereditary skin disease, and as a result, there is a higher chance of developing cardiovascular disease and metabolic syndrome (MS). Furthermore, those with severe psoriasis have a higher risk of developing metabolic syndrome conditions such as obesity, dyslipidemia, diabetes, and hypertension [1]. At the moment, the majority of traditional treatments may reduce psoriasis symptoms. That means there isn't currently a known cure for this illness. Further, many of these methods can have a variety of negative consequences on patients, including organ toxicity, immunosuppression, infection, and carcinogenesis, which restricts the use of these therapies over an extended period of time. Therefore, more research into safe, efficient, and potentially less expensive psoriasis treatment options is required. Based on research, using herbal remedies and taking use of their immunoregulatory and antioxidant properties over the course of treatment may be one approach to modify the response of the cells involved in the psoriasis cycle. Reviews of the literature attest to

the effectiveness of herbal treatments for psoriasis and the beneficial role that phytochemicals play in the treatment of this autoimmune disease. However, this study is unique in that it offers a thorough and current analysis of the antioxidative qualities of compounds derived from plants at each stage of the research process, including in vitro, in vivo, and clinical trials. Additionally, this review illustrates the varied effects of natural plant chemicals on oxidative stress pathways [4].

ETIOLOGY:

Environmental Elements:

Chemical, UV, and mechanical injuries are examples of environmental trigger factors. The numerous diseases, substance abuse, anxiety, sadness, smoking, and other elements.

Genetic Elements:

The genetic component has a certain genetic foundation. First and second degree relatives of psoriasis patients have higher incidence.

Immunological Components:

The condition psoriasis is autoimmune. psoriasis lesions by boosting T cell activation beneath the skin. These include drug and alcohol use, smoking, stress, and excessive alcohol consumption and experiencing stress. Immune system components and other biochemical compounds that typically control the proliferation and maturation of epidermal cells are compromised by psoriasis. They lead to skin cell growth and irritation.suffering from HIV psoriasis or the advanced consequences of the infection. Ayurveda claims that psoriasis is caused by a influence of elements including stress, indigestion, constipation, and changes in lifestyle. Known potential factors include streptococcal infection, stress, skin injury, and some drugs. Anti-malarial medications, beta-blockers, and lithium are among the medications that might cause psoriasis[5].

PSORIASIS TRIGGERS:

1. illnesses, such skin infections or strep throat
2. weather, particularly chilly, dry circumstances



3. Skin injuries including cuts, scrapes, bug bites, or extreme sunburns
4. Inhaling tobacco smoke and being near smoke ,excessive drinking of alcohol
5. Some medications, such as antimalarial, lithium, and treatments for high blood pressure
6. Quick stop using injectable or oral corticosteroids

RISK FACTORS:

People of any age can get psoriasis. A third of the cases start when the person is young. The following variables may raise your chance of contracting the illness:

Family history:

The illness is inherited. Your likelihood of developing psoriasis rises if you have one parent who has the condition. Additionally, your risk is increased if you have two parents who have psoriasis.

Smoking:

In addition to raising the chance of developing psoriasis, smoking tobacco may also make the condition worse.

SIGNS AND SYMPTOMS:

1. a patchy rash that appears differently on each individual; it can range from large eruptions over large areas of the body to places with scaling similar to dandruff
2. Color-variable rashes that typically appear as pink or red with silver scale on white skin and as colors of purple with gray scale on brown or black skin
3. Tiny areas of scaling that are frequently observed in kids
4. cracked, dry skin that could bleed
5. Soreness, burning, or itching
6. recurring rashes that appear for a few weeks or months before going away

TYPES OF PSORIASIS:

1. Plaque psoriasis:

Plaque psoriasis, the most common kind of psoriasis, is characterized by dry, itchy, elevated skin patches (plaques) that are scale-covered. There can be a few or a lot. Usually, they show up on the scalp, lower back, knees, and elbows. The colour of the patches varies according on the skin colour. Particularly on brown or black skin, the injured skin may heal with temporary color changes (post-inflammatory hyperpigmentation).



Figure no. 1: plaque psoriasis [12]

2. Nails psoriasis:

Psoriasis can cause pitting, irregular nail development, and discoloration in the fingernails and toenails. Onycholysis is the loosening and separation of psoriatic nails from the nail bed. The nail may collapse due to severe illness.



Figure no. 2: nails psoriasis [13]

3. Guttate psoriasis:

Children and young people are primarily affected by guttate psoriasis. Usually, a bacterial illness like strep throat causes it to occur. Small, drop-shaped, scaling spots on the arms, legs, or trunk are indicative of the condition.



Figure no. 3: Guttate psoriasis [14]

4. Inverse psoriasis:

The skin folds on the groin, buttocks, and breasts are the primary areas affected by inverse psoriasis. It results in smooth areas of inflammatory skin that get worse with perspiration and friction. One possible cause of this kind of psoriasis is fungus infections.



Figure no. 4: Inverse psoriasis [15]

5. Pustular psoriasis:

A rare kind of psoriasis called pustular develops well-defined blisters filled with pus. It might appear in small sections of the palms or soles or in large patches.



Figure no. 5: Pustular psoriasis [16]

6. Erythrodermica psoriasis :

Erythrodermic psoriasis, the least prevalent kind of psoriasis, can cause a peeling rash that can burn or itch severely throughout the entire body. It may be acute or chronic, with varying durations.



Figure no. 6: Erythrodermica psoriasis [17]

COMPLICATIONS:

If you have psoriasis, you run a higher chance of getting other illnesses, such as:

- Psoriatic arthritis is characterized by joint pain, stiffness, and edema.
- transient variations in skin tone (hyper- or hypopigmentation following inflammation) in areas where plaques have healed
- Eye disorders such uveitis, blepharitis, and conjunctivitis
- Obesity
- Diabetes type 2
- High blood pressure
- Cardiovascular disease
- Additional autoimmune conditions, like Cohn's disease, sclerosis, and celiac disease, are inflammatory bowel disorders
- Mental health issues include depression and low self-esteem [6].

TREATMENT:

Treatments for psoriasis focus on reducing the rate of skin cell growth and getting rid of scales. The treatment include:

SYNTHETIC TRATMENT OF PSORIASIS:

1. light therapy (phototherapy),
2. Lotions and ointments (topical therapy).
3. oral or injectable drugs,

1. Light therapy (phototherapy) :

- For moderate to severe psoriasis, light therapy is the primary line of treatment. It can be used either by itself or in conjunction with medicines. It entails exposing the skin to regulated levels of artificial or natural light. Treatments must be administered again. Discuss whether you are a good candidate for

home phototherapy with your healthcare professional.

- **Sunlight:** Heliotherapy, or short daily sun exposures, may help psoriasis. Find out from your doctor the safest technique to cure psoriasis with natural light before starting a sun exposure plan.
- **Goeckerman therapy:** The Goeckerman therapy is a method that combines light therapy with coal tar treatment. Because coal tar increases the skin's reactivity to ultraviolet B (UVB) light, this may be more effective.
- **UVB narrow bandwidth:** Psoriasis that doesn't respond to topical treatments, as well as psoriasis that is spread out and in isolated patches, can all be treated using carefully calibrated dosages of UVB broadband radiation from an artificial light source. Dry, itchy, and irritated skin are possible short-term adverse effects.
- **Excimer laser:** Only the afflicted skin is exposed to a powerful UVB light during this type of light therapy. Because excimer laser therapy uses more potent UVB radiation, fewer sessions are needed than with standard phototherapy. Blisters and inflammation are possible side effects.

2. Lotions and ointments:

Corticosteroids:

When it comes to treating mild to moderate psoriasis, these are the most commonly prescribed treatments. Oils, ointments, creams, lotions, gels, foams, sprays, and shampoos are among the forms they come in. For treating large patches and sensitive areas like the face or skin folds, mild corticosteroid ointments (hydrocortisone) are typically advised. During flare-ups, topical corticosteroids may be administered once daily; during remission, they may be applied every other day or on the weekends. Example: stronger corticosteroid cream or ointment, such as

triamcinolone (Triamex) or clobetasol (Cormax, Temovate, among others).

- **Vitamin D analogues:**

Skin cell proliferation is slowed by synthetic versions of vitamin D, such as calcitriol (Vertical) and calcipotriene (Dovonex, Sorilux). This kind of medication can be applied topically with corticosteroids or not at all. In places that are sensitive, calcitriol could not irritate as much. Compared to topical corticosteroids, calcitriol and calcipotriene are typically more costly.

- **Retinoids:**

Tazarotene comes in gel or cream form (Tazorac, Avage, etc.). It is used once or twice every day. Increased sensitivity to light and skin irritation are the most frequent side effects. It is not advised to use tazarotene if you are nursing a baby, wish to get pregnant, or are currently pregnant.

- **Anti-calcineurin agents:**

Calcineurin inhibitors: tacrolimus (Protopic) and pimecrolimus (Elidel) help to minimize scaly accumulation and calm the rash. In regions of thin skin, such the area around the eyes, where retinoids or steroid creams might cause irritation or damage, they can be very beneficial. The medication is not meant for long-term usage due to a possible elevated risk of lymphoma and skin cancer.

- **Acid salicylic:**

Shampoos and scalp treatments containing salicylic acid lessen psoriasis scaling.

- **Coal tar:**

Scaling, irritation, and inflammation are lessened with coal tar. Both nonprescription and prescription strengths are available. It is available in a number of forms, including shampoo, lotion, and oil. The skin may get irritated by these products. In addition, they can smell strongly, leave stains on clothes and bedding, and are messy.

- **Anthralin:**



Tar cream called anthralin suppresses the formation of skin cells. Additionally, it can smooth out skin and get rid of scales. It is not meant to be applied on the face or genitalia. Anthralin stains nearly everything it comes into contact with and can irritate skin. The standard procedure is to apply it, let it dry, and then wash it off.

3. Oral or injectable drugs :

In case your psoriasis is moderate to severe and you have tried other therapies without success, your doctor might recommend oral or injectable (systemic) medications. Due to their potential for serious adverse effects, several of these medications are only used temporarily

- **Steroids:**

In case you have a few small, persistent psoriasis patches, your doctor may recommend injecting triamcinolone directly into those areas.

- **Retinoids:**

Pills containing acitretin and other retinoids are used to lower skin cell production. Sore muscles and dry skin are possible side effects. It is not advised to use these medications if you are nursing a baby, wish to get pregnant, or are currently pregnant.

- **Biologics:**

These medications, which are typically injected, change the immune system in a way that breaks the cycle of illness and relieves the symptoms. Biologics have the potential to depress the immune system in ways that raise the risk of serious infections, they should be administered with caution. Example: adalimumab, infliximab, etanercept, ustekinumab, etc.

- **Methotrexate:**

Methotrexate, also known as Trexall, is typically given once a week as a single oral dose. It reduces skin cell growth and reduces inflammation. Compared to infliximab and adalimumab, it is less efficacious. Fatigue, loss of appetite, and upset stomach are possible side effects. Long-term

methotrexate users require regular testing to keep an eye on their liver function and blood counts.

- **Cyclosporine:**

Cyclosporine (Gengraf, Neoral, Sandimmune) inhibits the immune system when used orally for severe psoriasis. Although it can't be administered continuously for longer than a year, its effectiveness is comparable to that of methotrexate.[7]

HERBAL TREATMENT FOR PSORIASIS:

Curcumin:

Curcumin inhibits pro-inflammatory factors, T cell activation, and proliferation by acting on the AP-1, NF-B, and MAPK pathways. It also possesses anti-oxidative, anti-inflammatory, and immunomodulatory qualities. It may prevent DC from maturing, which has an impact on antigen presentation, cytokine production, and stimulating responding T cells. Curcumin prevents CD4+ T cells from producing IL-17 (Campbell et al., 2018). Curcumin suppresses pro-inflammatory cytokines TNF-, IL-17, and IFN-, hence impeding the growth of imiquimod-induced differentiated HaCaT cells (Kang et al. 2016). After receiving curcumin, mice's levels of IFN- and TNF-, as well as IL-23, IL-22, IL-12, and IL-2, reverted to normal. This could be the result of curcumin influencing the AP-1, NF-B, and MAPK signaling pathways inside psoriatic mice or because curcumin decreases Kv1.3 channel currents, reducing T cell growth. Curcumin nanohydrogel restored the properly distributed TJs proteins ZO1 and occludin in an imiquimod-stimulated psoriatic model while lowering iNOS and production of TNF[8].



Figure no. 7: curcumin [18]

Humulus lupulus:

Hop extract, or *Humulus lupulus*, is a potentially effective anti-psoriatic medication that has strong anti-proliferative properties. Since scaling and abnormalities in the epidermal barrier are pathogenetic variables that are central to psoriasis [9].



Figure no. 8: Humulus lupulus [19]

Hypericum perforatum:

One of the main active components of hypericum extract, hyperforin, has been shown to have antibacterial, anti-inflammatory, and wound-healing qualities. It has been demonstrated that *Hypericum perforatum* modulates the immune system by regulating CD8-mediated cytotoxicity and inhibiting TNF α -induced apoptosis in vitro, which can be beneficial for people with mild to moderate psoriasis [10].



Figure No. 9: Hypericum Perforatum [20]

Garlic:

For millennia, people have used garlic (*Allium sativum*), a well-researched and excellent natural treatment, to treat a wide range of illnesses (Pazyar and Feily2011). Among its contents are compounds like alliin that contain sulfur, enzymes like alliinase, and substances made from alliin by

enzymatic synthesis, such as allicin. Moreover, oligosaccharides, flavonoids, arginine, and selenium are found in garlic (Allison et al. 2006). Aged Garlic Extract (AGE) is one complex combination. Its components include fructose-arginine, beta-chromogenic, cyclophilin, S-methyl-l-cysteine, S-alkyl-l-cysteine, S-acetyl cysteine, S-allylmercaptol-cysteine, S-1 propionyl-l-cysteine, and allin. Additionally present are l-arginine, l-methionine, and l-cysteine. The activity of the nuclear transcription factor kappaB has been linked to psoriasis. A thorough examination has identified this route. This transcription factor can be inhibited by garlic (S-allyl mercapto cysteine, diallyl sulfide, and ajoene [8].



Figure no. 10: Garlic [21]

Oregon grape:

When used topically, Oregon grape, sometimes referred to as barberry, may lessen the severity of psoriasis. Oregon grape contains compounds that may help prevent bacterial and fungal diseases. Additionally, Oregon grape may reduce the overgrowth of skin cells in conditions like psoriasis [11].



Figure no. 11: Oregon grape [22]

Olibanum:

The yellowish-brown oleo-gum resin known as frankincense, or olibanum, is derived from

Boswellia species, including *Boswellia serrata* (Woolley et al. 2012). There are about 25 species in the genus *Boswellia* (Balamurugan et al. 2022). 200 individuals with mild to moderate psoriasis were treated with an olibanum ointment containing 5% 3-O-Acetyl-11-keto-boswellic acid three times a day for twelve weeks, according to several earlier research. The PASI dropped significantly, as did other blood markers such as leukotriene B₄, TNF, VEGF, and PGE₂. Thirteen people (6.5%) had contact dermatitis (Balamurugan et al. 2022) [8].



Figure no. 12: olibanum [23]

Pomegranate:

Punica granatum, or dried pomegranate, seeds are a common addition to recipes. In atherosclerotic people and animals, pomegranate extract flavonoids have been demonstrated to decrease low-density lipoprotein oxidation and cardiovascular disease. (Dornfeld and Aviram, 2001). Pomegranate juice has been shown to reduce systolic blood pressure and inhibit serum angiotensin-converting enzyme activity (Schubert et al. 2002). According to recent research, pomegranate has a special way of reducing NF-B activation in vascular endothelium (Asogwa and Okoye 2019) [8].



Figure no. 13: Pomegranate [24]

Araba tree:

Dithranol, a derivative of anthracene, is an effective topical treatment for psoriasis (synonym: anthralin). It was produced from chrysarobin, which was extracted from the bark of the araroba tree, which grows abundantly in the rain forests of the Amazon. Dithranol inhibits the synthesis of pro-inflammatory cytokines and the proliferation of keratinocytes. The standard of care, which involved applying 50 g/g of calcipotriol ointment twice a day, was significantly less effective than 15:45 min of dithranol quick contact treatment with stepwise increases in dithranol concentration up to 5% once every day for twelve weeks, according to a randomised study involving 106 patients with severe psoriasis lesions. (Moy and others, 2018)[8].

Basil:

Osteoporosis, psoriasis, septic shock, AIDS, and other inflammatory diseases have all been related to activate NF-B (Cyclin 2003). "Holy basil" has been shown to have chemo preventive qualities in the past. A triterpenoid made from rosemary and basil called ursolic acid, has been shown to block IKK, which in turn reduces cyclin D1, COX-2, and matrix metalloproteinase-9, limiting NF-B activation (Woolf 2018).[8]



Figure no. 14: Basil [25]

Cloves:

The anti-inflammatory and antioxidant qualities of cloves are widely known. Eugenol and isoeugenol are the compounds in cloves that are active. Numerous investigations have shown that these substances can prevent NF-B activation by blocking IB. disintegration (Murakami et al. 2003). Barra et al. (2018) cited Murakami et al.

discovered that bis-eugenol decreases the synthesis of inflammatory cytokines at the gene and protein levels and inhibits the degradation of IB, but not eugenol [8].



Figure no. 15: Cloves [26]

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