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Herbal Plants Used as Anti-Psoratic Activity: A Review

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Abstract: *Psoriasis is an inflammatory disease related to immune response. It is one of the chronic skin disease condition which has got no permanent cure. In spite of many treatment strategies, no strategy gives a fulfilled cure. Herbal drugs have been used since many years not only in Asian countries but also worldwide for social well being. Herbs have been one of the important and unique sources of medicines from the dawn of human civilization. The possible factors and triggers causing psoriasis include emotional stress, skin injury, systemic infections, certain medications and intestinal upsets. Many medicinal plants have been reported to have a therapeutic role in psoriasis, and the aim of the current study is to highlight such plants and related studies, which could add value to the psoriasis related research work.*

Keywords: Psoriasis, inflammation, medicinal plants, topical therapy, oral therapy, natural, herbal

I. INTRODUCTION

Inflammation is a part of the body's immune response and is the end result of oxidative stress in any body part. Among the various inflammatory diseases psoriasis is found to be more severe in form, though it is not infectious. The mostly affected parts in psoriasis are the skin, nails and joints. It comes under papulo-squamous disorders. Here, the outer layer of skin i.e. the epidermis moves towards the surface and then continually shed from skin. The skin formation touches a dramatically higher turnover rate. The name psoriasis is from the Greek language, meaning “roughly itching condition”; (psora: “itch", sis: “action”;). Psoriasis is an immune mediated disorder, where a normal skin cell mistakes for a pathogen, and sends a faulty signal that causes over production of new skin cell. It is also a hereditary condition but the way it inherits is still not predictable. It is a typically lifelong condition, which is not having a permanent cure, but various treatments can be implemented for controlling the severity of symptoms produced by it.

The available therapies are topicals as emollients, moisturizers, tars, anthralins, topical corticosteroids, vitamin A analogs and vitamin D analogs, systemic treatments involves corticosteroids, methotrexate, cyclosporine, etretinate, immunomodulators, hydroxyurea. Phototherapy and photo- chemotherapy are recently developed methods for treating this disorder .[1,2]

The immune mediated model of psoriasis suggests that immunosuppressant medication can cure psoriasis, but the role of immune system is not fully understood. A therapeutic paradox arises for researchers where, traditional therapies improve the psoriasis by decreasing the T-cell, but in HIV patients the decrease in T-Cell count worsen the psoriasis in other hand. This fact is supported by some researches in animal model, that psoriasis can be triggered in mice lacking T-Cells. Epidermal hyperproliferation, abnormal keratinocytes differentiation, angiogenesis with blood vessel dilatation and excess Th-1 and Th-17 are some histopathological conditions associated with psoriasis. Active psoriatic lesions are generally characterized by intraepidermal penetration of activated polymorphonuclear leukocytes, which causes uncontrolled production of reactive oxygen species, which leads to peroxidative damage to membrane of the skin and the reactive oxygen species may also activate the Phospholipase A 2 and thus increase the release of mediators of Arachidonic acid . PGE 2 production results in dilating the blood vessel of dermis which leads to leucocyte infiltration and stimulate keratinocyte cell growth.[3,4,5] The relationship between human, plant and plant derived products is very old. Plants have been therapeutically used by human in diverse physiological disorders starting from inflammation to life threatening diseases like cancer. In recent time, WHO is also promoting the herbal drugs because of their therapeutic benefits along with safety. This review deals with a precise discussion about psoriasis and the available plant derived medication for its treatment along with the future of herbal medication in this field.

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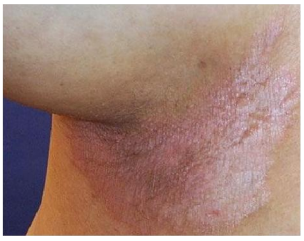
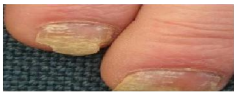
II. Types of Psoriasis [6]

No	Types of Psoriasis	Specification	Diagram
1	Psoriasisvulgaris	It is the most common clinical form of psoriasis, which has erythematosus plaques with sharp boundaries, localized in knees, elbows, scalp, and sacral region. It is a kind of parakeratotichy perkeratosis. The pathologyis related to decreased prostaglandin levels.	
2	Plaque Psoriasis	It is well circumscribed, erythematosus, scaly plaques >0.5 cm in diameter, either as single lesions or as generalized disease	
3	Flexural Psoriasis	It is also known as intertriginous or inverse psoriasis. It is well circumscribed, minimally scaly, thin plaques localized to the skin folds (inflammatory, axillary, groin, genital, natal cleft regions)	
4	Nail Psoriasis	It can be present without concomitant skin plaques. It can be pitting, distal oncholysis, sublingual hyperkeratosis, oil drop sign, splinter hemorrhages, leukonychia, and crumbling	
5	Scalp Psoriasis	It is one of the most common sites of psoriasis and is difficult to treat	
6	Palmoplantar Psoriasis	It is localized to the hands and soles of the feet. It has redness and scaling without obvious plaques to poorly defined scaly or fissured areas to large plaques covering the palm or sole. Erythema is not always found, but when it exists it appears as a pinkish-yellow lesion.	

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7	Pustular Psoriasis	It has sheets of monomorphic pustules on painful, inflamed skin and is most commonly localized to palms and soles	
8	Guttae Psoriasis	It appears as acute eruption of "dew drop", salmon-pink, fine-scaled, small plaques on the trunk or limbs. It can follow history of group A streptococcal pharyngitis or perennial group A streptococcal dermatitis. It is frequently seen in children and youngsters. The anti- streptolysin titers are usually raised. They appear in trunk, face,scalp, and limbs.	
9	ErythrodermicPsoriasis	It is acute or subacute onset of generalized edema covering 90% or more of the patient's entire body with little scaling. It might be associated with hypothermia, hypoalbunimia, electrolyte imbalances, and high-output cardiac failure and could be a life-threatening emergency. Desquamation can lead to edema and organ failure such as cardiac, renal, or hepatic.	

2.1 Co morbidities in Psoriasis [7]

Psoriatic arthritis is a very common systemic, inflammatory arthritis affecting psoriatic patients that can lead to significant joint damage and disability. Patients can develop remarkable morbidity and mortality if not treated early. Up to 50% of psoriasis patients develop advanced erosive disease. The presence of inflammatory arthritis in a patient with past or current psoriasis is the basis of diagnosis for psoriatic arthritis. The other comorbidities are risk of development of metabolic syndrome, cardiac disease, neoplasms, pulmonary disease, depression, osteoporosis, and inflammatory bowel disease.

2.2 Pathophysiology of Psoriasis [8]

The T helper cells producing interleukin (IL) 17, IL-22, and tumor necrosis factor (TNFα) are found to play an important role in pathogenesis of psoriasis. These inflammatory mediators lead to hyperproliferation of keratinocytes and endothelial cells. Apart from this several cytokines are implicated in pathogenesis.

2.3 Quality of life in Psoriasis [9]

Quality of life is severely compromised in psoriatic patients. There are various clinical severity scores and quality of life impairment scores employed in assessing psoriasis severity like Psoriasis area severity index (PASI), Psoriasis log based area and severity index (PLASI), Copenhagen psoriasis severity index (CoPSI), Beer-Sheva psoriasis severity index (BPSS), and National psoriasis foundation psoriasis score index (NPF-PS)

2.4 Treatment of Psoriasis

Phototherapy includes repeated exposure to ultraviolet radiations, useful in difficult to treat psoriasis like scalp psoriasis [10] .

2.5 Topical Therapies in Psoriasis [11]

- Anthralin (dithranol)
- Coal tar
- Salicylic acid

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- Calcineurin inhibitors
- Tazarotene
- Topical corticosteroids

2.6 Vitamin D analogs

- Calcipotriene
- Calcitriol
- Tacalcitol

2.7 Oral Therapies in Psoriasis

- Methotrexate
- Cyclosporine
- Acitretin
- Tofacitinib
- Monoclonal antibodies

IIII. HERBAL MEDICINAL PLANT USED IN PSORASIS

No	Plant name	Specifications	Diagram	References
1	Wrightatinctoria [9,10]	In mouse tail model of psoriasis induction with 2,4dinitrofluorobenzene (DFNB) induced contact hypersensitivity, hydro-alcoholic extract at 200mg/kg was given for 14 days. At the end of the study the tails were examined for degree of orthokeratosis. The extract at this dose was reported to have anti-psoriatic potential The In silico strategies of 67 compounds of Wrightiatinctoria with 238 protein targets were performed and found to suppress the hyperkeratosis by apoptosis mechanism.		[12,13]
2	Coleus forskholii [11]	The roots of Coleus forskohlii had been reported to possess anti-psoriatic activity, but were not studied in animal models. Forskolin the active constituent increases cyclic adenosine monophosphate and exerts its therapeutic potential.		[14]
3	Silybmmarianum [12, 13]	In in vitro radical scavenging activities of some herbs, Silybummarianum was used as a reference standard for testing anti-psoriatic activity. Topical gel formulation of Silymarin was formulated with carbopol and containing paraben and propyl paraben as preservatives. The formulation was tested for skin irritancy and passed it; the anti-psoriatic activity was not conducted in animal models.		[15,16]
4	Rubiacordifolia [14]	The active component of the herb Rubiacordifolia, 1,4-dihydroxy-2-naphthoic acid (DHNA) was reported that it induces HaCaT keratinocytes apoptosis through caspase-dependent and caspase-independent pathways.		[17]
5	Mahonaaquefolium [15]	The bark extract and the alkaloids berbamine were found to be inhibitor of keratinocyte with a IC50 of 35µM		[18]

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6	piniagalanga [16]	The ethanolic extracts of Alpiniagalanga induced expression of TNFAIP3 and significantly reduced the expression of IL-8, and NF-KB.		[19]
7	Curcuma longa [17]	Microgel of hydroalcoholic extract of turmeric containing curcumioids was tested in 34 patients, for 9 weeks. It was found that it reduced the PASI, pruritis, burning and pain, reduced mean redness and leg lesions		[20]
8	Nigella sativa [18]	The ethanolic extract 0.5ml, was administered topically in mouse tail model, for 14 days. The degree of ortho keratosis was reduced by Nigella sativa seed extract.		[21]
9	Melaleucaal ternifolia [19]	It is called tea tree oil and terinen-4-ol was suggested to be a potent anti-psoriatic agent.		[22]
10	Givotiarottle riformis [20]	The ethanolic extract of Givotiarottleriformis was tested at two dose levels 200mg/kg and 400mg/kg b.w, 5 times a week for 2weeks, 12h after UV-B induced photodermatitis model in rats. The Munro's micro abcesses, and epidermal thickness were reduced in the 400mg/kg group.		[23]
11	Woodfordiaf ruticosa [21]	The ethanolic extracts at two concentrations 0.05% and 0.1% (w/w) ointments were applied once daily for 3 weeks, after induction of psoriasis by Complete Freund's Adjuvant model. The extracts were found to reduce the redness, erythema, and scales in a dose dependent manner.		[24]
12	Ricinuscom munis [22]	The herbal gel of Ricinuscommunis was designed and developed for psoriasis, but was not tested in any animal model.		[25]

IV. Conclusion

The present review suggests that there are different modalities of therapy for psoriasis. Treatment with topical medications is superior to oral therapies. Even though many new allopathic drugs have emerged, the risk of adverse effects and economical constraints limit their use. Although there are many plants claimed to possess antipsoriatic activity, the research work undergoes on these plants are very few compared to other activities, Thus research work has to be carried out to prove the antipsoriatic potential of the herbs and formulations has to be developed to reach the patients such that they get right medicine in a safe, cheap and effective manner.

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