

Medicinal Plants Used In the Treatment of Psoriasis

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Abstract-The present work deals with the study of different plants used for the treatment of psoriasis. Different parameters like anti-inflammatory, anti-proliferative, anti-angiogenic, tissue repair action, regulation of cAMP levels in skin, UV-B induced photo dermatitis model, orthokeratotic region, antioxidant potential by DPPH, nitric oxide and hydrogen peroxide radical scavenging assays were studied as a measure for the treatment of psoriasis. The result of the studies revealed that the mentioned plants showed significant antipsoriatic activity and it leaves scope for further study.

Keywords: Medicinal plants, Psoriasis, orthokeratotic region, anti-inflammatory activity.

I. INTRODUCTION

Psoriasis is one of the commonest skin disorders seen by general practitioners. It is a very chronic skin disease. Millions of people are suffering from psoriasis worldwide. Its prevalence is identical in men and women, and across all socioeconomic groups. Some of the countries like South America, China, and Nigeria, have a particularly low prevalence of the disease.

Psoriasis can develop at any age, although it commonly appears between the ages of 15 and 22. A second peak appears during the 60–69 age range. Females tend to develop psoriasis slightly earlier than males, and those with a family history also have an earlier age of onset. This disease may last for just a few weeks or for a lifetime, with alternating periods of relapses and remissions. It is difficult to predict the course of the disease.

Psoriasis is an inflammatory and proliferative disease of the skin that results in a rapid turnover of the skin cells. The turnover can rise to seven times the normal rate, leading to thickening of superficial layers of the skin. The extensor surfaces of the limbs (especially the elbows, knees and shins), scalp, and lower back/buttocks are particularly affected, but psoriasis may involve any part of the body. When psoriasis involves the groins, armpits, perineum and the area under the breasts, the lesions tend to be less scaly and rather shiny¹.

II. MEDICINAL PLANTS USED IN THE TREATMENT OF PSORIASIS

Sophora flavescens & Lithospermum Erythrorhizon

Roots of these plants were studied for antipsoriatic activity. The results of the studies revealed that these herbs and/or their constituents have anti-inflammatory, anti-proliferative, anti-angiogenic, and tissue repair actions². These actions are indicative of these herbs being used in the treatment of psoriasis²

Coleus forskohli (mainmula)

In the present work it deals with the formulation and evaluation of the herbal extract of root of the plant. Literature survey reveals about its activity being used in psoriasis. The action is mainly reported by regulating cAMP levels in skin cells to have therapeutic benefit for the sufferers of psoriasis. The composition of gel consist of Forskolin an active constitute, propylene glycol as a penetration enhancer and Sodium CMC as gelling agent showed the best results in final formulation. The percentage of drug release, viscosity & spreadability profile of gel formulation was studied by 3 factorial designs³.

Cassia tora

Anti-psoriatic activity of flavonoids from Cassia tora leaves was evaluated using the rat ultraviolet B ray photodermatitis model. Histopathological analysis of the section revealed the absence of Munro's microabscess, elongation of rete ridges, and capillary loop dilation in ethanol extract of the plant and flavonoid compounds isolated from the leaves of ethanol extract of the plant namely luteolin-7-O-E-glucopyranoside, quercetin-3-O-E-Dglucuronide and formononetin-7-O-E-D-glucoside revealed that they exhibited a significant percentage reduction of relative epidermal thickness when compared with a positive control⁴.

In the HPLC analysis, three flavonoids were identified by comparison of the retention times of standard marker, namely luteolin, quercetin and formononetin. It was

concluded, using animal model, that the flavonoids from *Cassia tora* leaves have significant antipsoriatic activity⁴.

Ricinus Communis

The aim of the study was to prepare herbal gel formulation containing methanolic extract of the plant and to check its activity on psoriasis. Topical gel formulation was designed by using methanolic extract of seeds of the plant in varied concentrations. The gel was prepared by using carbopol 940(1%w/v), *Ricinus Communis* Extract, ethanol, propylene glycol, methyl paraben, propyl paraben, EDTA disodium, tri-ethanolamine and required amount of distilled water. The prepared gels were evaluated for physical appearance, pH, spread ability, drug content, swelling index, diffusion study, viscosity, homogeneity and grittiness. It was inferred from results that gel formulations were good in appearance and homogeneity⁵.

Aloe vera

A gel was prepared using ethanol extract of the plant and it was assessed for antipsoriatic activity using a mouse tail model. The extract produced a significant differentiation in the epidermis, as seen from its degree of orthokeratosis in mouse tail model for psoriasis when compared with the negative control. This was equivalent to the effect of the standard positive control, tazarotene (0.1%) gel⁶.

Nigella sativa

The ethanolic extract of *Nigella sativa* seeds extract produced a significant epidermal differentiation, from its degree of orthokeratosis when compared to the negative control. This was equivalent to the effect of the standard positive control, tazarotene gel, which showed a highly significant orthokeratosis. It was concluded that the ethanol extract of *Nigella sativa* seeds also showed increase in relative epidermal thickness when compared to control group by confirming its traditional use in psoriasis treatment⁷.

Rubia cordifolia

The standardized Ethyl acetate fraction of roots of *Rubia cordifolia* was formulated into topical gel and its keratinocyte-modulating action was tested on mouse tail model. Ethyl acetate fraction increased the number and thickness of granular layer and epidermal thickness on mouse tail skin, indicative of the keratinocyte differentiation-inducing activity. Taking the above findings together, the present preclinical study confirmed that Ethyl acetate fraction is a promising antipsoriatic agent⁸.

Smilax china

The isolated flavonoid quercetin from the rhizome of *S. china* produced significant orthokeratosis in the mouse tail test. In epidermal thickness, a significant reduction with

respect to control was observed in groups treated with retinoic acid and isolated flavonoid quercetin. The methanol extract and isolated flavonoid quercetin showed anti-inflammatory effect in terms of significant inhibition in leukocyte migration⁹.

Thespesia populnea

Screening for anti-psoriatic activity was carried out by topical application of different extracts & isolated compounds (TpF-1, TpF-2 & TpS-2) of *Thespesia populnea* bark in the form of a cream using the Perry's scientific mouse tail model. Successive pet-ether extract showed maximum antipsoriatic activity proved by increased orthokeratotic region. Amongst the extracts tested where as the compound TpF2 exhibited increased orthokeratotic region in the same. From the above data, it is can be said that, the plant *Thespesia populnea* is promising for further investigations to prove its anti-psoriatic activity¹⁰.

Wrightia tinctoria

The hydro alcoholic extract of *Wrightia tinctoria* leaves was evaluated for antipsoriatic activity by mouse tail test. Isoretinoic acid was used as the standard. Degree of orthokeratosis, drug activity and the relative epidermal thicknesses were calculated and statistically analyzed. The extract was also evaluated for its antioxidant potential by DPPH, nitric oxide and hydrogen peroxide radical scavenging assays. The extract produced significant degree of orthokeratosis compared to control. The extract showed prominent antioxidant activity in all the assays. The present study concludes that the selected plant has antipsoriatic activity and can be used for psoriasis treatment¹¹.

Scutellaria baicalensis

Baicalin isolated from *Scutellaria baicalensis* formulated in the form of cream was assessed for its antipsoriatic activity and anti inflammatory activity using the mouse tail model and 2, 4-dinitrofluorobenzene (DNFB)-induced contact hypersensitivity (CHS) mice model respectively. Baicalin was found to be a promising agent for the treatment of psoriasis and it leaves scope for further study¹².

Kigelia africana

A topically administered ointment containing methanol extract of the plant induced a significant and dose-dependent increase in orthokeratosis in parakeratotic areas of albino mouse tails, with significant effects on the epidermal thickness compared to the vehicle control¹³.

Hypericum perforatum

Hypericum perforatum (Saint John's Wort), a phytomedicine was found to have both anti-inflammatory and antiproliferative properties, it has been recently

reported to be clinically helpful for improvement of psoriatic lesions¹⁴.

Picea mariana

The bark of the drug has been traditionally used by North American natives for treating topical inflammations. Hence it has been also suggested to improve various inflammatory skin disorders like Psoriasis. Extracts of these barks are reported to contain polyphenolic compounds which have well known anti-inflammatory activities. Based on the capacity of polyphenolic compounds to modulate functions of normal human keratinocytes, this study was set up to correlate the mechanisms of action of a chemically characterized polyphenolic extract of *Picea mariana* on lesional keratinocytes of skin with psoriasis which is a disease driven by the immune system in which TNF- α plays a significant role, which is produced by keratinocytes under TNF- α activation. This study reveals its usage in treating psoriasis¹⁵.

III. CONCLUSION

Wide ranges of medicinal plants are being used for treating skin diseases. More than 80% of the population in the world depends on traditional herbal remedies for treating various skin diseases. In the present study it has been reviewed about various medicinal plants for treating psoriasis. With the usage of different models for treating psoriasis, it has been proved that there is extensive range of medicinal plants for treating psoriasis. Psoriasis is a chronic inflammatory disorder with characteristic lesions of the skin with patches. These studies make a remarkable contribution in treating psoriasis and patients can get rid of social stigma associated with the disease.

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