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Review Article

The Potentials of Herbal Plant against the Psoriasis

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Abstract

Chronic autoimmune skin disease termed psoriasis is characterised by excessive keratinocyte multiplication, scaly plaques, severe inflammation, and erythema. T lymphocytes, leukocytes, vascular endothelium, and epidermal keratinocytes also contribute in the pathogenesis of psoriasis. Increased leukocyte recruitment and increased levels of cytokines, growth factors, and genetic factors like interleukin (IL)-1, IL-6, IL-17, IL-22, IL-23, tumour necrosis factor (TNF), interferon (IFN), transforming growth factor (TGF), toll-like receptor (TLR)-2, signal transducer and activator of transcription (STAT-3), 15-lipoxygenase (LOX)-2. The most important aspects impacting the treatment of psoriasis are coiled-coil alpha-helical rod protein 1 (CCHCR1), steroidogenic acute regulatory protein (StAR), and vitamin D receptor (VDR). Various synthetic medicinal drugs have also been known to have the side effect of psoriasis. Due to their safety and accessibility, herbal medications may indicate the potential as effective anti-psoriatic agents.

Keywords: Psoriasis, Herbal Drug, *Silybum marianum, Thespesia populnea, Mahonia aquifolium*

Introduction:

Psoriasis is a common chronic inflammatory dermatosis. Any age group may develop this condition. Psoriasis can occasionally be linked to AIDS, myopathy, spondylitic cardiovascular disease, arthritis, or enteropathy. Psoriatic arthritis can cause minor deformities or severe ones that resemble the rheumatoid arthritis-like changes to the joints.[1] There are numerous conventional medical treatments established for psoriasis, including topical treatments (steroid creams, vitamin D analogues, psoralen, salicylates, fumaric acid esters, anthralins (dithranol), tacrolimus, and retinoids, such as tazarotene) and systemic medications (methotrexate, cyclosporine, retinoids, 6-thioguanine, mycophenolate mofetil, troglitazone and new biologic agents, such as adalimumab, alefacept, efalizumab, etanercept, infliximab), through to phototherapy or combinations of those.[2] Psoriasis affects approximately 25 million people in North America and Europe, making it the most common immune-mediated skin disease in adults. It is an organ-specific autoimmune condition that is stimulated by an activated cellular immune response, similar to Crohn's disease, rheumatoid arthritis, multiple sclerosis, and juvenile-onset diabetes.[3] In the name 'Psoriasis', 'Psora' which means itch.Psoriasis is a non-contagious, itchy, dry, and unpleasant skin condition that can affect the whole person. Sharply marginated, scaly, erythematous plaques that form in a largely symmetrical distribution and are mostly hereditary are its primary symptoms. The head, tips of fingers and toes, palms and soles, umbilicus, gluteus, under the breasts and genitals, elbows, knees, shins, and sacrum are the areas most commonly affected.[4]

Pathogenesis

The pathogenesis of psoriasis is mainly caused by early keratinocyte maturation, which is brought on by a cascade of inflammatory mediators in the dermis produced by dendritic cells, macrophages, and T cells, which are key players in the disease's exacerbation. In psoriasis, CD4+ Thelper (Th) cells are seen infiltrating the dermis more frequently. These cells release proinflammatory cytokines such interferon (IFN)-, tumour necrosis factor (TNF), interleukin (IL)-17A, and IL-22.[5]

Aloevera:

Aloe vera is a well-known plant that is useful in first aid treatments for burns and skin care. Lupeol, salicyclic acid, urea nitrogen, cinnamonic acid, phenols, and sulphur are six of the antiseptics present in aloe vera. Each one of them inhibits the growth of fungus, bacteria, and viruses.An aloe vera extract (0.5 %) in a hydrophilic cream effectively removed the psoriatic plaques in 83.3 % of the aloe-treated patients compared to 6.6 % of the placebo group in a 1995 double-blind, placebo-controlled investigation evaluated aloe's activity on 60 patients with psoriasis vulgaris.[6] The perennial, succulent, cactus-like plant known as aloe vera (AV) is a member of the Liliaceae family. A colorless, mucilaginous gel that contains a variety of potential pharmacological actions, such as anti-inflammatory properties, is produced by AV. This

gel is used for both cosmetic and therapeutic purposes. When compared to a placebo, AV cream has been said to be a successful treatment for psoriasis without any drug-related adverse effects.[7]

Silybum marianum:

It is usually referred to as milk thistle. The effectiveness of silymarin in the treatment of psoriasis may be attributed to its capacity to inhibit cAMP phosphodiesterase by enhancing hepatic endotoxin clearance and preventing leukotriene production. High amounts of cAMP and leukotrienes have been seen in psoriasis patients abnormally. Many phytochemicals are present in Silybum marianumun.Mostly all milk thistle parts, including the leaves, fruits, and seeds, possess silymarin, the compound with the most biological activity being silybin. Silymarin is high in its fruits (flavanolignans silybin, silydianin, and silychristine), while betaine, trimethylglycine, and important fatty acids are found in the seeds. Due to the presence of these phytochemicals, milk thistle is able to perform all of its biological functions.[8]

Melaleuca alternifolia:

Melaleuca alternifolia which popularly known as Tea Tree Oil, well-known for its capacity to heal wounds.Since Australia was settled in 1788, melaleuca alternifolia has been utilised for medical purposes.In recent years, the medical usage of M. alternifolia's essential oil, also known as tea tree oil, has developed.[9] About 100 constituents of tea tree oil, including terpinen-4-01, 1,8-cineole, a-terpineol, terpinolene, and a- and y-terpinene, constitute the majority of the oil, consisting of up to 90% of the total.[10]

Thespesia populnea:

Thespesia populnea (Malvaceae) is a plant that has historically been used to cure a variety of skin conditions, including eczema, ringworm, guineaworm, scabies, and psoriasis.External application of oil made by boiling powdered bark in coconut oil is used to treat psoriasis and scabies. There aren't any confirmed scientific data on its anti-psoriatic activity, though. Thespesia populnea was chosen as the plant to establish scientific evidence for its traditional claim to be anti-psoriatic.[11]

Mahonia aquifolium:

Mahonia aquifoliumwhich is commonly known as Barberry, Oregon grape, Berberis belongs to the Berberidaceae family, which grows naturally in North and South America as well as Europe. Many isoquinoline alkaloids, such as berberine, palmatine, berbamine, oxyacanthine, jatrorrhizine, bervulcine, magnoflorine, and columbamine, can be found in Mahonia aquifolium's root and wood. The most well-known of them is berberine. An anti-inflammatory drug called Mahonia aquifolium has been used to treat skin conditions including psoriasis.[12] In American traditional medicine, Mahonia aquifolium (Pursh) Hutt. phytopreparations have been taken orally, mainly for the treatment of various skin diseases[13]. As a treatment for psoriasis, a tincture has been added to homoeopathy in Europe.[14]

Smilax china:

Smilax china Linn. (Liliaceae) is locally referred to as "Bilri" in Pakistan while it is known as "Ba Qia" (or "Jin Gang Teng") in China. With 350 species, Smilax is widely spread throughout the world's tropical and temperate climates, particularly in East Asia and North America.It is used in the practise of traditional Chinese medicine (TCM) to treat a variety of illnesses and Smilax china has been shown to have anti-psoriatic properties.[15] Numerous flavonoids have been demonstrated to have immunomodulatory potential and to function as anti-inflammatory, anti-stress, anti-cancer, and in the treatment of a variety of skin conditions. Interest in the area has grown as a result of flavonoids' medicinal promise and the need for scientific validation in conventional medicine.The rhizome of the plant S. china Linn. is used in various diseases such as rheumatism, gout, epilepsy, skin diseases, chronic nervous diseases, syphilis, flatulence, dyspepsia, colic, neuralgia, constipation, helminthiasis, psoriasis and seminal weakness.[16]

Cassia tora:

The traditional utilisation of Cassia tora L. (Caesalpiniaceae) to treat psoriasis and other skin conditions.[17,18] An annual undershrub called Cassia tora Linn. (Leguminosae), also known as 'Chakunda' (Bengali), 'Chakramarda,' and 'Prabhunatha,' is commonly grown wild in India's wasteland. Up to a height of 4000 m on the Western Himalaya, it is abound in Northern, Western, and Central India. C. tora has been widely used in the Ayurvedic medical system to treat a variety of infections. The effects of the leaf extract from Cassia tora were equivalent to those of griseofulvin and were found to have strong antifungal activity against some fungal species. There have been reports of considerable anti-inflammatory effects from the leaf extract.[19] Its antipsoriatic activity hasn't been shown scientifically. Consequently, Cassia tora L. has been chosen as the plant to support the traditional assertion that it is an antipsoriatic with scientific evidence.[20]

Kigelia Africana:

K. africana, popularly known as the sausage tree or Worsboom, is typically grown in tropics. It can be used to treat a wide range of medical conditions, including psoriasis. Various secondary metabolites may be the cause of its wide range of therapeutic activities. Irinoids, flavonoids, naphthoquinones, and other volatile components are some of these substances.[21]

Rubia cordifolia:

Researchers successfully screened 60 commonly prescribed Chinese materia medica for their antiproliferative effects on cultured HaCaT keratinocytes as part of our research efforts to develop effective and safe herb-based antipsoriatic treatments from traditional Chinese medicine. They identified the crude ethanolic extract of the root of Rubia cordifolia L., or Radix Rubiae, as having the most potent antiproliferative effect, with an IC50 value of 1.4 μg/ml.[22]

Capsicum annuum/ Capsicum frutescens:

Plants known as hot peppers are widely grown in nations likes Turkey, China, and Mexico. Many different pepper species, primarily C. annuum, are added to different products and used as food. 20 capsacinoids, including nordihydrocapsaicin, capsaicin, dihydrocapsaicin, homocapsaicin, homodihydrocapsaicin, and nonivamide, are found in C. annuum, a member of the Solanaceae family.[23] The epidermal hyperplasia that characterises psoriasis has been the focus of the majority of therapeutic psoriasis treatment methods. However, psoriasis also exhibits significant abnormalities in the cutaneous vascular system. Although it is unknown how exactly these microcircular abnormalities contribute to the pathogenesis of psoriasis, some researchers have hypothesised that they may be the initial cause of psoriasis.[24]

Nigella sativa:

Nigella sativa Linn. An annual herb belongs to family Ranunculaceae. It is usually referred to as black cumin. Nutritional constituents such as carbs, lipids, vitamins, minerals, and proteins—including eight of the nine essential amino acids—are all present in the Nigella sativa seeds. The

seeds are administered topically to skin outbreaks. The seeds have generally been used to treat psoriasis tropicus, which causes generalised discomfort and patchy eruptions.Researchers started a systematic investigation to determine the antipsoriatic activity of the ethanolic extract of Nigella sativa seeds evaluated using mice tail model, due to the fact that the seeds had been used for psoriasis but no scientific studies on this usage had yet been documented. In psoriatic lesions, the granular layer of the epidermis is significantly diminished.[25]

Scutellariabaicalensis:

Scutellariabaicalensis, also known as Huangqin in Chinese, is the dried root of the Labiatae plant *S. baicalensis* Georgi. Effective, secure, affordable, and widely accessible, this Chinese herbal remedy has been used for centuries to treat psoriasis. Current studies have given some theoretical support for the therapeutic use of baicalin in the treatment of psoriasis.For instance, baicalin can specifically prevent nitric oxide synthesis by inhibiting the expression of inducible nitric oxide synthase in fibroblasts when cytokines are triggered and polymorphonuclear leukocyte chemotaxis in response to leukotriene B4. Baicalin can also stop the fibroblast cell cycle, which reduces keratinocyte proliferation. Baicalin has anti-inflammatory and antipsoriatic properties. It can also prevent aberrant keratinocyte growth and IL-8 release.[26]

Persea americana (Avocado):

For the treatment of chronic plaque psoriasis, researchers noted that there are already numerous effective topical treatments available. Unwanted side effects are, sadly, frequently linked to these treatments and provide a rather high risk. Goal and Strategy: In this randomised, prospective clinical research, the effects of the vitamin D3 analogue calcipotriol were compared intraindividually on the right and left sides with those of a freshly created vitamin B12 cream containing avocado oil.[27]

Kukui nut oil:

Patients with psoriasis who visited Hawaii and bought kukui nut oil reported anecdotally that topically using it helped lessen the severity of their psoriatic lesions. Ancient Hawaiians were aware of the therapeutic benefits of kukui nut oil and would squeeze the clear oil from the kukui kernel and apply it to burnt or inflamed regions of the skin. According to earlier research by Dewsbury and Escobar, applying fish oil as a topical ointment led to fewer psoriasis symptoms. [28]

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