



REVIEW ARTICLE

THE ROLE OF HERBAL COSMETICS FOR THE MITIGATION OF THE PSORIASIS

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ABSTRACT

Psoriasis is a chronic inflammatory skin disease with a strong genetic predisposition and autoimmune pathogenicity. The potential molecular targets for psoriasis are JAK, STAT3, Interleukin 8. By inhibiting these targets it marks in alteration in immune response and suppresses the abnormal activation of inflammatory cascade like psoriasis. The lack of possible cure and certain adverse reactions to several synthetic treatments has led to extensive research for anti-psoriatic activity in herbal based formulation. The recent synthetic treatments available for treating psoriasis include phototherapy, oral medications like methotrexate, cyclosporine, and azathioprine but due to severe side effects of phototherapy which include pain, uneven pigmentation and scarring and certain side effects of oral medications like methotrexate increased the risk of liver fibrosis, cyclosporine can lead to hypertriglyceridemia. Due to these severe side effects which can lead to discomfort in the body. Therefore, the herbal preparations which are naturally available can avoid this problem and can be used to treat psoriasis. This review aimed for the exploration of the herbal cream formulation containing pure herbs, viz. oil extracts and methanolic extracts, extract of leaves of basil, thyme tulsi, turmeric, neem, beeswax, olive oil, rose oil assessed the antipsoriatic activity of various cream formulation.

Keywords: Psoriasis, Herbal Cream, Herbal Excipients, Molecular Targets

INTRODUCTION

Psoriasis is a recurrent, chronic inflammatory skin condition [1-16]. The most prevalent type of psoriasis is plaque (psoriasis vulgaris), which is characterised by reddish patches which is

coated in silvery white scales. The red patches are usually symmetrically distributed on the body part like knees, palm of hand and chest, as well as the scalp, elbows. They can grow into enormous plaques with a core patch of normal skin, forming geometrical patterns. The nails are become brittle, irregularly laminated and thicker in many cases.

The term 'psoriasis' refers to a variety of clinical conditions, the most prevalent and well-known of which being psoriasis vulgaris, often known as plaque psoriasis [17-24]. Given the prevalence of psoriasis vulgaris in comparison to other types of psoriasis [25-30].

Psoriasis normally appears gradually, although it can also appear suddenly. psychological disturbances, Injury to the skin and acute infection are all possible precipitating events. During the summer, the lesions usually become less severe and sometimes disappear, probably due to the action of sunlight. Extensive sloughing of the outer layer of the skin, with consequent irritation, and psoriatic arthritis are severe psoriasis consequences. Individuals with psoriasis, on the other hand, are often in good health. Researchers believe that the fundamental causes of psoriasis are the result of complicated interplay between genetic and environmental factors due to the disorder's heterogeneity in progression and severity [31-46].

Epidemiology

Psoriasis affects both men and women is most common between the ages of 10 and 30, but females and those mostly those female which have family history are more likely to develop it. Its onset age is bimodal, with men's peaks at 30–39 and 60–69 years and women's peaks 10 years earlier. It is especially common in colder climates. Psoriasis affects about 2% to 3% of the population in the US. Between 0.05 and 0.3 percent of Asians, on the other hand, suffer from depression. [7, 16-17]

Pathogenesis

Skin barrier changes associated with psoriasis. The stratum corneum (SC), which is connected to the protein-rich corneocyte, which is mostly composed of ceramides, cholesterol, and free fatty acids, is where the skin's barrier function is located. [10].

Regular corneocyte regeneration maintains the skin's water content, adaptability, and structural soundness while also treating any impairment [12]. Continuous exposure to environmental factors, chemicals, and harsh detergents and soaps, can have a significant impact on the skin's organizational and useful properties, leading to negative morphological and physiological changes to the skin throughout time [11].

A major issue with the psoriatic skin barrier's dysfunction is skin dryness, which is caused by an abnormal and flawed desquamation (shedding) process in

which visible scales made of corneocytes are shed. This results in the cosmetically unattractive rough texture of dry skin and excessive transepidermal water loss (TEWL), which in turn causes discomfort and itching. Irritators, allergens, and microbes can penetrate damaged, dry, and brittle skin that is unable to effectively bind and hold water, causing irritation, inflammation, and infection. [10-14]

Molecular targets for the psoriasis

JAK Inhibitors

Topical treatment for mild-to-moderate psoriasis has been successfully explored using the JAK1 and JAK2 inhibitor ruxolitinib. According to study, ruxolitinib is an effective topical medication with modest systemic absorption. Less than 1% of the plasma concentrations required for systemic action in healthy volunteers were present in patients taking topical treatment, showing that ruxolitinib reduces the growth of psoriasis plaques locally rather than through systemic effects. [38]

Tofacitinib has undergone the most rigorous scientific testing and is thought to be both a topical and oral administration. Stage I and II clinical studies on tofacitinib, confirmed dose-structured development in patients with psoriasis as compared to the fake treatment bundle. [38]

Bruton's tyrosine kinase inhibitor

In intrinsically resistant cells like dendritic cells (DCs) and gamma delta T cells,

Bruton's tyrosine kinase (BTK) has been shown to carry out critical signalling functions. [39]

Small molecules focused on ROR γ t

Suffocating Th17 cell separation by focusing on ROR γ t with tiny atom opposing agonists might be a promising treatment for psoriasis. Furthermore, little atoms disrupting ROR γ t are expected to be safer than worldwide immunosuppressive specialists like cyclosporine. [40]

Stat3 as a healing goal for the remedy of psoriasis

Administration of STA-21-containing treatment to psoriasis patients in nonrandomized research. Following two weeks of topical STA-21 medication, the psoriatic injuries of six out of the eight patients improved. Therefore, we think that focusing on Stat3 could result in a psoriasis treatment [41].

The interleukin-8 receptor a potential target for antipsoriatic therapy

The development of psoriasis is thought to be significantly influenced by interleukin-8. Cyclosporine, calcitriol, calcipotriol, or dithranol all had a dose-dependent effect on interleukin-eight binding to cultured human keratinocytes [42,43].

AVAILABLE TREATMENT OF PSORIASIS

There is no permanent cure for psoriasis but there are a number of therapies

available like synthetic and herbal treatment to help with the skin symptoms.

Synthetic treatment of psoriasis

Topical psoriasis therapies made of synthetic materials come in a range of shapes (such as creams and gels) and often reduce inflammation and scaling. For instance, retinoids (vitamin A derivatives) and synthetic forms of vitamin D act by slowing down the division of skin cells, whereas corticosteroids, coal tar cream, and salicylic acid reduce inflammation. Psoriasis can be treated using phototherapy, which includes exposing the skin to UV rays [1]. Emollients and moisturizers can help reduce flare-ups. The greatest lotions, creams, and ointments for dry skin are typically heavy, oily products.

Salicylic acid removes the scales that develop on psoriasis areas. It comes in a variety of forms, including liquids, foams, gels, soaps, shampoos, pads made of fabric, and patches. When used in conjunction with other skin treatments, it is extremely beneficial. Other drugs function more effectively when dead skin flakes are removed.

Coal tar might improve the appearance of your skin by slowing the formation of skin cells. It also comes in a variety of forms, such as shampoo for psoriasis of the scalp. The inferior goods are sold over-the-counter.

Mild steroids (corticosteroids) reduce inflammation and decrease skin cell

proliferation to prevent accumulation. They are available in various strengths. For delicate places like your face or neck, as well as skin-fold locations like your groin or armpit, weaker formulations may be effective. A prescription from a doctor is necessary for stronger corticosteroids.[8]

Drawbacks of the synthetic treatment of psoriasis

While phototherapy offers advantages, there are some disadvantages as well, including pain, uneven pigmentation, and scarring. A higher risk of skin cancer has also been connected to long-term therapy. The most effective psoriasis drugs impair the immune system, leaving patients susceptible to a number of infections and illnesses that can be fatal. Despite this, oral medications are routinely used as a last resort to treat psoriasis. Examples of oral anti-inflammatory drugs include methotrexate, cyclosporine, and azathioprine. Oral biologics (made from human or animal proteins) are drugs that alter the immune system by destroying malfunctioning immune cells. Biotechnological treatments for psoriasis include infliximab (Remicade), etanercept (Enbrel), and guselkumab (Tremfya) [1]. The side effects of oral medication which is used to cure psoriasis is show in Table 1. [9] Retinoids, which are vitamin A-based medications, can increase your risk of liver disease.

Table 1: Conventional Systemic Therapy and Associated Risk

Drug	Associated Risk
Methotrexate	Liver Fibrosis
Acitretin	Hypertriglyceridemia
Cyclosporine	Nephrotoxicity
Phototherapy	Erythema

HERBAL TREATMENTS FOR PSORIASIS

People can manage their symptoms with the use of medicines and natural therapies. Many herbs can help with psoriasis symptoms by reducing inflammation or slowing the proliferation of skin cells without any adverse effect.

Mahonia aquifolium

This plant has antiproliferative properties, which means it can slow down skin cell proliferation. This capacity aids in the treatment of psoriasis, which causes skin cells to divide too quickly, resulting in scaly skin and plaques.

Aloe vera

Aloe vera contains chemicals that may assist to decrease inflammation and modify the immune system. Aloe vera may benefit from these ingredients since they allow it to help to keep the skin from drying out by soothing the skin and reducing inflammation.

Other all-natural remedies

There is currently insufficient evidence to suggest that alternative herbal therapies are

effective psoriasis treatments. However, the following herbs may be useful therapy choices for folks to viz. neem, extracts of sweet whey, capsaicin, curcumin. For treating symptoms, vitamin D creams may be as effective as corticosteroid treatments. Corticosteroids, on the other hand, were more successful for scalp psoriasis. [18] There are several disadvantages of the synthetic treatment of psoriasis like phototherapy and oral medication while in herbal treatment of psoriasis, there are less adverse effects on the skin and other body parts than the synthetic that is why we can prefer more herbal formulation or medication than synthetic medication.

HERBAL EXCIPIENTS WHICH CAN BE USED FOR THE PREPARATION OF HERBAL FORMULATION MEANT FOR THE TREATMENT OF PSORIASIS

Tamarind seeds

The core of *Tamarindus indica* (family Fabaceae) is used to make tamarind xyloglucan. For viscosity and adhesion, this is required. Tamarind gum is a carbohydrate having a glucosyl, xylosyl, & galactosyl ratio of 3: 2: 1. The wet

granulation approach was utilised to manufacture matrix tablets from polysaccharide derived from tamarind seeds, and the effects on release of drug were investigated. Tablets with varying polymer proportions have been developed, resulting in decreased drug release and higher polymer content. The tamarind gum-based tablets are capable of passing through the bulk of the drug. [20,21].

Fenugreek seeds

Trigonella foenum graecum Linn., popularly known as fenugreek, is an annual fragrant leguminous plant which is known as fenugreek. These herbs have been utilised for their medicinal effects for a long time. Because of their bioactivity, degradability, simplicity of access, and low cost, natural polysaccharides found in the Fenugreek plant are used as culinary and pharmaceutical excipients. Flatulence, diarrhea, cholera, lack of appetite, indigestion, difficulty breathing, eye diseases, have all been treated with this. It has anti urolithic, antihypertensive, antidandruff, anti-inflammatory, anti-oxidant, and anti-inflammatory properties. The mucilage content of fenugreek seed is high. [22]

Karaya gum

The polysaccharide gum karaya has an acidic pH. This molecule is made up of

glucose, rhamnose, & galactic acid. Gum's high viscosity prevents it from being used as a binder & disintegrant for typical dosage forms. After many results study revealed that an altered gum karaya disintegrated quickly in the tablets, the capability of gum karaya was studied [26].

Guar gum

Guar gum is a type of gum that comes from the guar plant. Guar gum is comparable to locust bean gum in that it is mostly made up of a polymer of galactose & mannose with various proportions. Guar gum is used as an adhesive and dissolving agent in tablet formulations. This emulsion stabilizer is quite useful. It is not affected by the pH, water content, or solubility of the tablet matrix. It is not always bright white and discolours with time in alkaline tablets. [28]

Lubricants

Lubricants as shown in Table 5 can avoid components from sticking to capsule machine and clumping together. Lubricants prevent the material and the die wall from grinding together while producing and ejecting the tablet, which is critical for proper tablet formation and ejection. Lubricants promote product flow by reducing inter-particle friction. Lubricants are often split into two types: hydrophilic and non-hydrophilic.

Table 2 List of natural Lubricants

No.	Excipients	Source
1	Stearic acid	Animal
2	Castor oils	Castor seeds
3	Sodium chloride	Minerals
4	Paraffin oil	plant of paraffin

PRESERVATIVES

Preservatives are frequently used to increase the shelf life of many food and medicinal products. To stop microorganisms from altering and degrading during storage, especially in products with a water content, preservatives are required.

Clove essential oil

Clove oil contains the highest amounts of phenolic substances including polyphenols, eugenol acetate, gallic acid, as well as β -pinene, limonene, linalool, and benzaldehydes, 2-Heptanone, ethylhexanoate at lesser concentrations. Clove's antibacterial and antioxidant properties, among other things, make it very desirable. As per the World Health Organization, people should ingest 25mg/kg of body weight each day. Eugenol is absorbed fast through the tongue.

Neem oil

This herb is unique in that it has therapeutic qualities throughout the entire plant. Herbal remedies are made from

seeds, and leaves, flowers, bark, which are all significant elements of the plant.

CONCLUSION

This leads us to the conclusion that synthetic treatments, such as oral medicines and phototherapy, frequently have harmful side effects. Herbal creams and other formulations have shown to be quite effective at treating psoriasis with fewer side effects. It has been found that several different herbs, including turmeric extract curcumin, block the phorbol ester-induced activation of the transcription factors NF-B and AP-1 and useful for the treatment of psoriasis.

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