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HERBAL REMEDIES: A NEW ERA FOR PSORIASIS DISEASES

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ABSTRACT

The objective of this study was to review and explore the top fifteen currently herbal remedies used and the historically used herbal remedies in the treatment of psoriasis. Psoriasis is undoubtedly distressing, affected individuals are typically otherwise healthy and thus well suited to thoughtful outpatient care. Recent advances in our understanding of psoriasis have provided parallel advances in topical treatments. Recent advances in our understanding of psoriasis have provided parallel advances in topical treatments. Specifically herbals, there is limited scientific data regarding their benefits and interactions. About 75% of patients have mild-to-moderate psoriasis, amenable to topical treatment is lifetime controlling herbals remedies like Aloe, Cayenne, Chamomile, Dong Quai, Emu oil, Evening prime rose oil, Fish oil, Tea tree oil, Turmeric, Slippery elm, Wintergreen, Shark cartilage, Milk thistle, Glucosamine, Flexseed oil are needed. Herbal remedies for treatment psoriasis diseases to overcome the adverse effect, antagonistic effect and bioavailability of drug.

INTRODUCTION: Psoriasis is a psychosocially, and at times medically, debilitating disorder that affects 1% to 3% of the population worldwide. Although psoriasis is undoubtedly distressing, affected individuals are typically otherwise healthy and thus well suited to thoughtful outpatient care. Recent advances in our understanding of psoriasis have provided parallel advances in topical treatments. Appropriate knowledge and use of these therapies is vital to both dermatologists and family physicians caring for patients with psoriasis [1]. The goal of treatment is lifetime control. About 75% of patients have mild-to-moderate psoriasis, amenable to topical treatment. Psoriasis is a disease without a lasting cure. Yet it is the subject of active research that provides frequent therapeutic advances. As knowledge progresses, more efficacious treatments with fewer side effects become available. Awareness of these advances in therapy is the responsibility of physicians caring for patients with psoriasis [2, 3].

Psoriasis is very common and causes substantial morbidity. Because most psoriasis is mild to moderate, patients are well suited to outpatient topical therapy. Advances in topical treatments for psoriasis have kept pace with a rapidly evolving comprehension of its pathogenesis, making a review of current therapies useful for those who treat psoriasis [4].

What is Psoriasis: Psoriasis is a chronic skin disorder marked by periodic flare-ups of sharply defined red patches covered by a silvery, flaky surface. The primary disease activity leading to psoriasis occurs in the epidermis, the top five layers of the skin.

- The process starts in the basal (bottom) layer of the epidermis. Here, keratinocytes are manufactured.
- Keratinocytes are immature skin cells that produce keratin, a tough protein that helps form hair and nails as well as skin. In normal cell growth, keratinocytes mature and migrate from the bottom (basal) layer to the surface and are shed unobtrusively. This process takes about a month.
- In psoriasis, however, the keratinocytes proliferate very rapidly and travel from the basal layer to the surface in only about four days. The skin cannot shed these cells quickly enough so they accumulate in thick, dry patches or plaques.
- Silvery, flaky areas of dead skin build up on the surface of the plaques and are shed. The underlying skin layer, the dermis, is red and inflamed.
- The dermis contains nerves and blood and lymphatic vessels, which supply the abnormally multiplying keratinocytes with their blood supply and also transport potent immune factors that cause the underlying inflammation and redness[5].

What is the cause of Psoriasis: The precise causes of psoriasis are unknown. It is generally believed that psoriasis is a disorder in which factors in the immune system, enzymes, and other biochemical substances that regulate skin cell division become impaired. This abnormal immune response causes rapid proliferation of keratinocytes (immature skin cells) and inflammation. Such events are likely to be triggered by environmental factors, such as weather or stress, in people with genetic factors that make them susceptible [6-7].

Pathophysiology of Psoriasis: The cause of psoriasis is not fully understood. There are two main hypotheses about the process that occurs in the development of the disease. The first considers psoriasis as primarily a disorder of excessive growth and reproduction of skin cells. The problem is simply seen as a fault of the epidermis and its keratinocytes. The second hypothesis sees the disease as being an immune-mediated disorder in

which the excessive reproduction of skin cells is secondary to factors produced by the immune system. T cells (which normally help protect the body against infection) become active, migrate to the dermis and trigger the release of cytokines (tumor necrosis factor-alpha TNF α, in particular) which cause inflammation and the rapid production of skin cells. It is not known what initiates the activation of the T cells. The immune-mediated model of psoriasis has been supported by the observation that immunosuppressant medications can clear psoriasis plaques. However, the role of the immune system is not fully understood, and it has recently been reported that an animal model of psoriasis can be triggered in mice lacking T cells. Animal models, however, reveal only a few aspects resembling human psoriasis.

Genetic basis of Psoriasis: Psoriasis and associated psoriatic arthritis (PsA) are complex genetic diseases with environmental and genetic components. Approximately 10- 30% of patients with psoriasis develop PsA. This suggests that susceptibility factors for psoriasis are also susceptibility factors for PsA. However, the development of PsA in psoriasis patients may require additional environmental stimuli or additional genetic factors that predispose to inflammation of the joints as well as the skin. Interestingly, in psoriasis, arthritis, and autoimmune arthritis in mice, self-reactive T cells do not destroy synoviocytes but stimulate them to proliferate. This may be due a genetic predisposition leading to a high sensitivity of synoviocytes or keratinocytes in patients to various activating stimuli. Other variants may result in inflammatory cells with a lower threshold for activation or a prolonged state of activation. This hypothesis is supported by the examples provided below where variants associated with the development of arthritis or psoriasis is frequently associated with the immune system[8].

Cellular basis of Psoriasis: Although psoriasis vulgaris is usually identified by the clinical appearance of characteristic red, raised, scaly skin lesions, it is best defined as a unique skin disease by a set of underlying cellular changes (histopathology). Clinical features, then, are explained by impressive growth and dilation of superficial blood vessels (redness) and equally impressive hyperplasia of the epidermis. Epidermal growth occurs in a pattern termed ‘‘psoriasiform’’ hyperplasia, which describes both elongated rete pegs, thickening (acanthosis), and differentiation changes (**Fig. 1**).

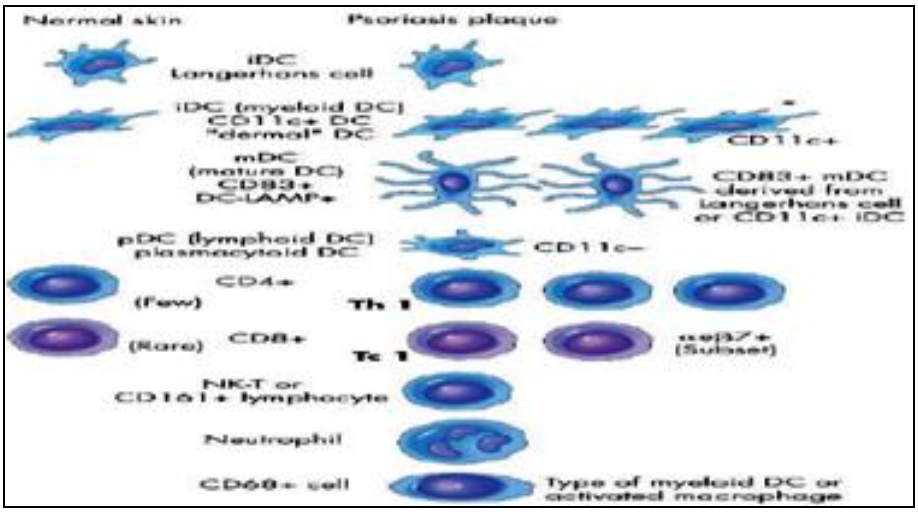

FIG. 1: THE ARRAY OF LEUCOCYTES SUBSETS THAT APPEAR IN PSORIASIS VULAGARIS

In psoriatic epidermis, keratinocytes proliferate and mature rapidly so that terminal differentiation, normally occurring in granular keratinocytes and then squamous corneocytes, is incomplete. Hence, squamous keratinocytes aberrantly retain intact nuclei (parakeratosis) and release few extracellular lipids that normally cement adhesions of corneocytes.

Accordingly, poorly adherent stratum corneum is formed and this results in the characteristic scale or flakes of psoriasis lesions. Psoriasis vulgaris is a disease of interfollicular epidermis, and it does not significantly alter the growth of follicular epithelia or the normal hair growth cycle. Rarely, a few small pustules can be identified in very inflamed psoriasis plaques, but usually leucocyte infiltration in psoriasis plaques is a microscopic finding. The appearance of mononuclear leucocytes in papillary dermis and polymorphonuclear leucocytes in the stratum corneum are defining features of psoriasis histopathology. However, even with this characteristic array of cellular changes, it is necessary to exclude skin infection by yeast or fungi, since the immune reaction to these microbes can produce a virtually identical histological picture.[9-10]

Approach to Treatment [11]:

Mild-to-moderate plaque psoriasis:

- Betamethasone dipropionate– calcipotriol combination
- Corticosteroid (moderate to high potency)
- Calcipotriol
- Tazarotene- corticosteroid combination
- Tazarotene
- Tar, Anthralin

Facial or intertriginous psoriasis:

- Low-potency corticosteroid (i.e., hydrocortisone 1% cream or ointment)

Scalp psoriasis:

- Corticosteroid lotion (i.e., betamethasone valerate, clobetasol)
- Corticosteroid scalp oil or shampoo (fluocinonide)
- Corticosteroid foam (where available)
- Calcipotriol lotion
- Tar shampoo

Palmar or plantar psoriasis:

- High to superpotent corticosteroid
- Betamethasone dipropionate- salicylic acid combination

Herbal Medicine- A Current Status: In ancient cultures of some countries like India, China, Egypt, Greek, Rome and Syria people methodologically and scientifically collected information on herbs which lead to introduction of Herbal Pharmacopoeias. The classical examples are *Charak Samhita* and *Sushruta Samhita* in India. Despite the importance of plant-lead discoveries in the evolution of medicine, some regulatory bodies such as U.S. Food and Drug Administration (FDA) consider herbal remedies to be insignificant or potentially dangerous. Indeed today in United States, herbal products can be marketed only as food supplements under Dietary Supplement Health and Education Act of 1994 (DSHEA).

Herbal Treatment for Psoriasis:

Aloe:

- **Scientific name:** *Aloe vera*
- **Forms:** Topical/ infusion, drink/ dietary modification/ tablet/ capsule.
- **Active Ingredien**t: Anthraquinone, Salicylic acid.
- **Scientific evidence:-** Controlled clinical trial, topical greater clearing off psoriasis
- treated versus placebo 83% VS 6% [14]

- **Adverse effect:** diarrhea kidney Inflammation red urine seizures low potassium electrolyte abnormalities rash.
- **Herbal drug interaction:** Anti- arrhythmics diuretics, digoxin- glyburide, topical Hydrocortisone.

Cayanne:

- **Scientific name:** *Capsicum annum*
- **Forms:** Topical/ capsule/ tablet/ dietary modification/ infusion drink
- **Active Ingredient:** Capsaicin
- **Scientific evidence:** Topically reduced scale & redness [15-16]
- **Adverse effect:** skin burning at application sites excessive mucous secretion from the nose profuse.
- **Herbal drug interaction:-** ACE-inhibitor, acetaminophen, aspirin, anticoagulants, antihypertensive, MAO- inhibitors, sedatives, theophylline

Chamomile:

- **Scientific name:** *Matricaria recutita*
- **Forms:** Topical/capsule/infusion drink
- **Active Ingredient:** Chmazulene queritin
- **Scientific evidence:-**no studies
- **Adverse effect:** Allergic reaction in people with allergies to ragweed and chrysanthemum; increased time to stop bleeding and clot
- **Herbal drug interaction:** Anticoagulants, anti platelets, sedatives

Dong Quai

- **Scientific name:** *Radix angelic*
- **Forms:** capsule
- **Active Ingredient:** Psoralens, osthole
- **Scientific evidence:** CCT; two-thirds of patients experienced clearing of their disease with oral supplements [17]
- **Adverse effect:-** Bloating, loss of appetite, diarrhea, light sensitivity and rash, breast development in men, increased bleeding and clot time, fever, dizziness, may enhance response to radiation therapy
- **Herbal drug interaction:-** Anticoagulants, oral contraceptives

Emu oil:

- **Scientific name:** *Dromaius novaehollandiae*
- **Forms:** Topical/capsule
- **Active Ingredient:** Unknown
- **Scientific evidence:** NS
- **Adverse effect:** unknown adverse effect
- **Herbal drug interaction:** None reported

Evening Primrose oil:

- **Scientific name:** *Oenothera biennis*
- **Forms:** Capsule/topical/infussion drink
- **Active Ingredient:** cis- Gammalinolenic acid
- **Scientific evidence:** CCT; no benefit [18], CCT: evening primrose oil and fish oil
- **Adverse effect:** Contraindicated in pregnancy; headache, gastrointestinal upset, nausea
- **Herbal drug interaction:-** Anticoagulants, anti platelets, phenothiazines

Fish oil

- **Scientific name:** *N/A*
- **Forms:** Topical/capsule/intravenous/dietary modification
- **Active Ingredient:** Omega-3 fatty acids
- **Scientific evidence:** CCT topical:-improved scale, plaque thickness and erythma, but not itch [19]

- **Oral supplements**: CCT: Reduced itch, erythma and scale [20]. Fish oil plus UVB improved psoriasis [21] versus: CCT/Uncontrolled clinical trial (UCT) demonstrate no difference in diseases activity [22-24]
- **Adverse effect:** Increased levels of vitamins A and D, bleeding, fishy aftertaste, loose stools, nausea; decreased triglycerides (TGs) and increased low-density lipoproteins (LDLs), which are cholesterol test components; increased bleeding time
- **Herbal drug interaction:** Anticoagulant/anti platelet agents, including warfarin

Flaxseed oil:

- **Scientific name:** *Linum usitatissimum*
- **Forms:** Capsule/topical
- **Active Ingredient**: Omega-3 unsaturated fatty acids, lignans
- **Scientific evidence:** NS
- **Adverse effect:** Menstrual cycle abnormalities, constipation, flatulence, decreased nutrient absorption
- **Herbal drug interaction:** Anticoagulants, estrogenics: tamoxifen, raloxifene.

Glucosamine (for psoriatic arthritis)

- **Scientific name:** *N/A*
- **Forms:** Intravenous/intramuscular/capsule
- **Active Ingredient:** 2-Amino-2-deoxyglucose
- **Scientific evidence:** NS
- **Adverse effect:-** Affects insulin level and glucose metabolism in the body, gastrointestinal complaints, headache, leg pain, peripheral swelling, itching, allergic reactions
- **Herbal drug interaction:-** Insulin or oral hypoglycemic agents

Milk thistle:

- **Scientific name:** *Silybum marianum*
- **Forms:** topical/capsule/infusion drink
- **Active Ingredient:** Flavonoids
- **Scientific evidence:** NS
- **Adverse effect:** Diarrhea, uterine stimulation-cramping, altered liver function tests, increased perspiration, and gastrointestinal upset
- **Herbal drug interaction:** Butyrophenones, inhibits cytochrome P-450 3A4, phenothiazines, phentolamine

Shark cartilage from spiny dogfish shark and hammerhead:

- **Scientific name:** *Squalus acanthias, Sphyrna lewin*
- **Forms:** Capsule/tablet
- **Active Ingredient:** Sphyrnastatin 1 and 2
- **Scientific evidence:** CCT; statistically significant improvement in Psoriasis Area Severity Index (PASI) with increasing dose, severity of itch, and the Physicians Global Assessment (PGA) [25]
- **Adverse effect:** Taste alteration, acne, rash, flatulence, nausea, vomiting, indigestion, constipation, diarrhea, loss of appetite, low blood sugar, jaundice, low-grade fever, abnormal liver function tests
- **Herbal drug interaction:** None reported

Slippery elm:

- **Scientific name:** *Gaultheria procumbens*
- **Forms:** Capsule/tablet/intraveinous/infusion drink
- **Active Ingredient:** Mucilag
- **Scientific evidence:** Case report (CP): 5 patients improved with oral supplements [26]
- **Adverse effect:** No adverse reactions reported

- **Herbal drug interaction:** May slow absorption of oral medications

Tea tree oil:

- **Scientific name:** *Melaleuca alternifolia*
- **Forms:** Topical/capsule
- **Active Ingredient:** Terpinen-4-ol, alpha-terpineol, alpha-pinene
- **Scientific evidence:** NS
- **Adverse effect:** Systemic contact dermatitis, disorientation, coma, abnormalities in white blood cell numbers
- **Herbal drug interaction:** No drug interactions reported

Turmeric:

- **Scientific name:** *Curcuma longa, Curcuma domestica*
- **Forms:** Capsule/tablet/topical/infusion drink/dietary modification
- **Active Ingredient:** Sesquiterpenes, zingiberene, curcuminoids
- **Scientific evidence:** CCT: reduction in the severity of psoriasis [27]
- **Adverse effect:** Contraindicated in patients with bile duct obstruction, gallstones, and intestinal disorders; contact dermatitis
- **Herbal drug interaction:** Anticoagulants/ anti-platelets, camptothecin, cyclopho-phamide, doxorubicin, indomethacin, mechlorethamine, reserpine

Wintergreen:

- **Scientific name:** *Gaultheria procumbens*
- **Forms:** Capsule/topical/ drink
- **Active Ingredient:** Methyl salicylate
- **Scientific evidence:** NS
- **Adverse effect:** Ringing in the ears, vomiting, rapid breathing, changes in acidity and alkalinity of the blood, fluid on the lungs, increased bleeding and time to clot
- **Herbal drug interaction**: Warfarin

Future Drug Development: Historically, agents used to treat psoriasis were discovered by experimentation or by accident. In contrast, current novel therapeutic agents are designed from a better understanding of the immune processes involved in psoriasis and by the specific targeting of molecular mediators. Examples can be seen in the use of biologics, which target T cells and TNF inhibitors. It has been suggested that cannabis might treat psoriasis, due to the anti-inflammatory properties of its cannabinoids, and the regulatory effects of THC on the immune system. The adverse effects of cannabis might be overcome by use of more specific cannabinoid receptor medications, to inhibit keratinocyte proliferation.

Future innovation should see the creation of additional drugs that refine the targeting of immune-mediators further.

1. ABT-874 is a human anti-IL-12 monoclonal antibody being developed by Abbott Laboratories in conjunction with Cambridge Antibody Technology for the treatment of multiple autoimmune diseases including psoriasis. Phase II trials have been completed and showed promising results. Abbott was planning to initiate Phase III trials in 2007.
2. In 2004, Tas and Avci demonstrated cyclopamine's clinical potential for the treatment of psoriasis and basal cell carcinoma in two preliminary proof of concept studies. By treating 31 psoriatic lesions in 7 patients, these authors asserted that topical cyclopamine was more effective in the clinical and histological clearance of guttate and plaque psoriasis than the topical steroid clobetasol-17 propionate. Furthermore, they demonstrated that concurrent application of

cylopamine and clobetasol-17 propionate accelerated regression and clearance of selected lesions greater than cyclopamine alone with clearance times as early as 48 hours. They assert that cyclopamine inhibits the abnormal proliferation of epithelial cells, induces terminal differentiation, and is associated with the decreased presence of inflammatory cells, including CD41 lymphocytes.

3. On August 27, 2006, scientists led by Jeung-Hoon Lee created in the laboratory synthetic lipids called pseudoceramides which are involved in skin cell growth and could be used in treating skin diseases such as atopic dermatitis, a form of eczema characterized by red, flaky and very itchy skin; psoriasis, and glucocorticoid-induced epidermal atrophy, in which the skin shrinks due to skin cell loss.

CONCLUTION: Today, psoriasis vulgaris is recognized as the most prevalent autoimmune disease caused by inappropriate activation of the cellular immune system. Psoriasis has a significant impact not only the patient health but also on a patient's quality of life - sometimes profoundly altering their everyday life.

Understanding the genetic, cellular and biochemical mechanisms behind the pathogenesis of psoriasis vulgaris has provided the basis for the development of treatments that more adequately control this physically and psychologically debilitating disease. In today scenario, there are lots of medications in different system to treat the psoriasis diseases in topical treatment but herbal remedies have a great potency because it have a lesser side effect or toxic effect with compare to other system. Instead of that herb-herb interaction to overcome the adverse effect, antagonist effect & the bioavailability of drug.

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