



Phytotherapy Review & Commentary

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Phytotherapy for Atopic Dermatitis (Eczema)

Introduction

The treatment of skin disorders in phyto-

therapy draws heavily on traditional considerations. These can be represented as follows:

- Skin disorders (other than outright infections or injury) are indicative of deeper metabolic imbalances. Hence the use of topical agents, as relied upon heavily in conventional dermatology, is of limited value and represents only a superficial approach which is essentially based on symptom control. (This is not to say that topical herbal treatments are without value in skin disorders, just that they are employed judiciously as only part of an overall strategy.)

- Skin lesions are manifestations of a greater disease process. Given that skin disorders involve unspecified disordered metabolism at a deeper level, the use of agents which can effect a change in these processes is required. These agents are known as alteratives or depuratives (see below). They are probably the most mysterious agents used in Western herbal therapy.

- As well as depuratives, other agents which assist the various detoxification mechanisms used by the body can be indicated to remove toxic accumulations and achieve a restoration of normal metabolism and immune function.

- Attention to lifestyle and diet is an important part of the treatment program, which is based on treating the patient as a whole (and as an individual).

- In many cases the skin lesion is a valid attempt by the body to discharge or metabolize toxic agents. Hence chemical treatment aimed at suppressing (as opposed to judiciously controlling) this process will ultimately be counter-productive.

From the above it is clear that the phytotherapeutic treatment of skin disorders is largely aimed at the cause, whatever that might be. Fortunately, recent scientific research is revealing new information about the causes of certain skin diseases - especially eczema (atopic dermatitis). Such relevant information will be included in this review.

Herbal Actions

Before covering the herbal approach to eczema, it is useful to briefly review some of the herbal actions which are particularly relevant for dermatological conditions.

Depuratives/Alteratives

Depuratives, otherwise known as "blood cleansers" or "alteratives," are employed to effect a gradual change in chronic disease states, especially skin, joint and the connective tissue disorders. They are said to act by improving the processes of detoxification and elimination, hence they can be expected to act only slowly. Progress can be measured over months, rather than days or weeks.

The main depuratives are *Arctium lappa* (burdock), *Mahonia aquifolium* (Oregon grape), *Trifolium pratense* (red clover), *Galium aparine* (cleavers), *Rumex crispus* (yellow dock), *Scrophularia nodosa* (figwort), *Viola tricolor* (heartsease), *Smilax species* (sarsaparilla), *Solanum dulcamara* (bittersweet) and *Iris versicolor* (blue flag).

However, herbs with an action on the immune system, such as *Echinacea species* and *Phytolacca* and choleric herbs including *Taraxacum officinale* (dandelion), *Cynara scolymus* (globe artichoke), *Fumaria officinalis* (fumitory) and *Berberis vulgaris* (barberry) are also regarded as possessing some depurative activity.

Anti-allergic Herbs

Herbs with anti-allergic properties are used for symptom control or relief, especially in eczema and urticaria. They include *Albizia lebeck*, *Scutellaria baicalensis* (Baical skullcap) and *Urtica dioica* (nettles). They are generally taken internally, although *Albizia* can be applied topically.

Anti-inflammatory Herbs (internal use)

Anti-inflammatory herbs are mild agents which can help to control (but not suppress) symptoms while longer-term strategies involving depuratives and addressing the causes take effect. Their use will help keep the patient encouraged to continue with the treatment. They include evening primrose oil, *Bupleurum falcatum*, *Glycyrrhiza glabra* (licorice), *Rehmannia glutinosa* and *Centella asiatica* (gotu kola).

Anti-inflammatory Herbs (topical use)

These include *Calendula*, *Matricaria chamomilla* (*Chamomilla recutita* or German chamomile), *Stellaria media* (chickweed), *Glycyrrhiza glabra* (licorice), *Hamamelis virginiana* (witch hazel) and *Aloe barbadensis* (Aloe vera) as well as the emollient activity of herbs containing mucilages such as marshmallow root.

Definition

Eczema, or dermatitis, is a pruritic inflammatory skin reaction that manifests with variable clinical and histologic pictures. Atopic dermatitis is a dermatitis which is linked to the atopic state. The patient is much troubled by itching skin and there is a history of chronic or chronically relapsing dermatitis, worst on the flexures, and a family or personal history of atopy (asthma, hayfever, urticaria etc).

Pathogenesis

Factors involved in the etiology or pathogenesis of atopic dermatitis are discussed below.



Atopic Dermatitis

a) Family History

Atopic syndrome is genetically determined and is associated with high plasma levels of IgE. When both parents have the same atopic disease, their child has about a 70% risk of expressing this disease. However, the increasing prevalence of atopic dermatitis is difficult to explain on the basis of genetics alone.¹

b) Biochemical Abnormalities

The skin of patients with atopic dermatitis is typically dry. This could be linked to an abnormality of essential fatty acid metabolism. It has been proposed that a deficiency in the enzyme d-6 desaturase may imbalance the essential fatty acid content of the skin and reduce the production of important anti-inflammatory prostaglandins. These postulates underpin the use of oral and topical evening primrose oil in the treatment of atopic dermatitis.

c) Allergen Exposure

There is a longstanding controversy as to whether allergy is a major pathogenic factor in atopic dermatitis. Several studies have associated food allergy, inhalant allergens and skin contact with airborne allergens with atopic dermatitis in some patients.²

Even in the absence of specific IgE for house dust mites, infants with atopic dermatitis have proliferative T-cell responses to these antigens.² A double-blind controlled trial found that house dust mite avoidance measures greatly reduced the activity of atopic dermatitis, especially in children.³ Responses to this therapy varied considerably, despite the fact allergic reactivity to house dust mite antigens can be established by prick-test challenge in virtually all patients with atopic dermatitis.

These observations highlight a potential misconception concerning allergen exposure in this disorder: a positive skin-prick test (which tests for an IgE-based response) does not necessarily identify those allergens which might be contributing to the underlying immunological disturbance. Some patients with a positive skin reaction to dust mite do not respond to reduced exposure. A corollary is that food allergens are not necessarily identified by a prick-test challenge, although the study described below illustrates that it can be a useful, but not infallible, guide.

Twenty-six children with atopic dermatitis and markedly elevated serum IgE concentrations were evaluated for clinical evidence of hypersensitivity to foods with double-blind placebo-controlled food challenges. Selection of foods for challenges was based on positive prick skin tests (>3 mm wheal) or a convincing history. At least one positive skin test to a food antigen was found in 24/26 patients. A total of 111 double-blind placebo-controlled challenges were performed in these children after suspect foods were eliminated from their diets for 10 to 14 days. There were 23 positive challenges in 15 children, 21 of which manifested as cutaneous symptoms, primarily pruritus and an erythematous macular and/or maculopapular rash involving 5% (or greater) of the body surface. In all, 14 children (54%) developed cutaneous symptoms after food challenges. All symptoms occurred within 10 min to 2 hr of challenge; nasal symptoms, mild wheezing, and gastrointestinal symptoms were seen in some children. No symptoms occurred in 104 placebo challenges. There were 86/111 clinically insignificant positive skin tests (77%) and three false-negative skin tests. These studies demonstrate that in some children with atopic dermatitis, immediate food hypersensitivity can provoke cutaneous pruritus and erythema, which leads to scratching and subsequent eczematoid lesions. Foods which commonly elicited symptoms on challenge were milk, wheat, eggs, soya and

peanuts.⁴ (This study highlights that replacing cow's milk with soya milk is not advisable in some patients.) In a follow-up study, elevated plasma histamine levels were found in the group of subjects who had positive reactions to food challenges.⁵

Other studies have found that chocolate, seafood, oranges, celery and yeast also can commonly provoke symptoms in patients with atopic dermatitis.^{6,7}

d) Immunological Abnormalities

For atopic dermatitis there is a definite defect in cell-mediated immunity within the skin and increased susceptibility to cutaneous viral and fungal infections, yet patients are not systemically immunosuppressed.²

Many types of inflammatory cells are present in skin lesions, but the major abnormality is thought to involve hyperstimulatory T-cells.² Much interest has focussed on the shift in T-helper-cell activity towards a T-helper 2 (Th-2) type response. Both T-helper 1 and 2 cells can induce B cells to produce immunoglobulins, but only Th-2 cells induce IgE.²

T-helper 2 lymphocytes in lesional skin specific for house dust mite have been identified in some patients. Th-2 cells sensitive to other aeroallergens and food antigens have also been identified. In children with cows-milk-induced atopic dermatitis, the development of an expanded population of responsive T-cells was seen after casein exposure.²

A unifying hypothesis involving defects in the blood monocyte, a major antigen-presenting cell, has been proposed. The shift toward the T-helper 2 lymphocyte profile is suggested to be a result of decreased cyclic AMP in monocytes due to increased concentrations of phosphodiesterase (which breaks down cAMP).²

This emphasis on Th-2 response is similar to the "Hygiene Hypothesis" which has been proposed for asthma. The theory is that lack of exposure to normal childhood infections leads to poor maturation of the immune system with an emphasis on an allergic response. In support of this a recent UK study found that more crowded houses, increased family size and birth order, which possibly increase early exposure to infections, may offer protection from subsequent development of eczema.⁸

e) Link to Infection or Abnormal Microflora

The cutaneous microbial flora of atopic dermatitis patients shows striking differences in terms of the presence of *Staphylococcus aureus*. The relative rarity of colonization on normal skin is in sharp contrast to the high rate found in patients with atopic dermatitis, ranging from 76% on unaffected areas up to 100% on acute, weeping lesions. *Staphylococcus aureus* can induce inflammatory reactions via a range of activities, including toxin and protein secretion. Among these are the superantigens, which have potent inflammatory and immunological effects.⁹ (Superantigens bind directly to macrophages without antigen processing. This can have profound pathological effects due to the release of cytokines by these cells or via the subsequent activation of T-cells.¹⁰)

The superantigen *S. aureus* enterotoxin B (SEB) induces the expansion of Th-2 cells, leading to increased IgE synthesis.⁹ Several additional or alternative mechanisms have been proposed for the pathogenic role of bacterial superantigens in atopic dermatitis.¹⁰ Some conventional approaches to atopic dermatitis are now advocating oral and topical antibiotic therapy aimed against *S. aureus*, with improved results being claimed.⁹

In a prospective study, 110 atopic dermatitis patients and 30 healthy volunteers (age: 11 to 45 years) demonstrated a high colonization density of skin lesions, nasal, pharyngeal and vaginal mucosa: with *Staph. aureus* in 102 cases, with *streptococci* in 53 cases and with *Candida*, *Aspergillus* or *Penicillium spp.* in 36 cases. Quantitative investigations of fecal and duodenal aspirate microflora in the same atopic dermatitis group revealed significantly increased counts of hemolytic

Atopic Dermatitis

Herbal Treatment

• Echinacea will help to balance the immune response. Experience shows that it does not aggravate atopic dermatitis (and may even shift responses away from Th-2 type to Th-1). Boosting the immune response with Echinacea, Andrographis etc. may help to control *S. aureus* infection. Other herbs for immune support can be useful, such as Astragalus.

• Antiallergic (such as Albizia, Baical skullcap and nettles) and anti-inflammatory herbs (such as licorice and Bupleurum) will help to control symptoms. ➤

coliforms, *Candida/Geotrichum* and pathogenic Clostridia, generally associated with dramatically reduced counts of lactic acid producing bacteria. By contrast, positive skin cultures with *S. aureus* were isolated in only 2 controls and increased *Candida* counts in feces were found in another 3 subjects. Specific IgE-antibodies against *Candida albicans*, *Aspergillus fumigatus* and *Saccharomyces cerevisiae* were evident in 61, 32 and 56 cases, respectively, suggesting an increased infectious susceptibility and sensitivity to fungal antigens in the disease group. Thirty-one of 58 tested atopic dermatitis sera showed obviously decreased gammaglobulin levels (IgG and IgM, $p < 0.005$) and in 24 of 35 patients tested for delayed cutaneous hypersensitivity reactions, a severe depression of the cellular immune response was recorded. The authors suggested that correction of the intestinal and dermal dysbiosis along with appropriate nutritional support and immune modulating therapy are essential steps in the management of atopic dermatitis.¹¹ The same research group used citrus seed extract to modify fecal flora and digestive symptoms in patients with atopic dermatitis.¹²

f) Digestive Function

Some early studies found a low gastric production of hydrochloric acid was correlated with incidence of atopic dermatitis, for example Ayers in 1929¹³ and Brown and co-workers in 1935.¹⁴ Therapy with hydrochloric acid resulted in a dramatic improvement in some cases.¹³ A Russian study found markedly reduced activity of membrane-bound small-intestinal enzymes in 346 patients with atopic dermatitis. Correction of this dysfunction results in improvements in both digestion and skin.¹⁵ A related study found a similar problem in infants with atopic dermatitis and reduction of disaccharide intake (such as lactose, sucrose and maltose) was instituted.¹⁶

Treatment

Lifestyle and Diet

Measures to eliminate exposure to house dust mite antigen should be instituted.

Simple or multiple exclusion diets should be considered, based on the clinical information. Elimination of cow's milk (and related dairy products) is recommended as the starting diet if a simple exclusion diet is chosen.¹⁷ Care should be taken to substitute protein and calcium in young children. If there is no symptom improvement in about 4 to 6 weeks, different foods in turn could be tried such as eggs, peanuts or seafood.¹⁷ Various multiple exclusion diets are available.¹⁷ These typically involve avoidance of dairy products, eggs, nuts, pork, bacon, shellfish, yeast and fruit. Such diets can be severe and should not be instituted as a first resort. The diet should otherwise be well balanced and should not contain excessive amounts of junk food, sugar and refined carbohydrates.



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Atopic Dermatitis

- Bitter herbs such as gentian and warming aromatic herbs such as ginger will improve digestion (if indicated).
- Long-term treatment with depuratives such as burdock, figwort, cleavers, yellow dock and sarsaparilla. *Solanum dulcamara* (bittersweet) is a depurative herb which also possesses anti-inflammatory properties.¹⁸ Heartsease (*Viola tricolor*) is specifically used for infantile eczema.
- Evening primrose oil as a source of gamma linolenic acid can correct an essential fatty acid imbalance and confer anti-inflammatory effects.
- Internal treatment with the other anti-inflammatory herbs listed above.
- Topical treatment with anti-inflammatory and antiseptic herbs. The antiseptic herbs will help to control skin microflora imbalance and infection with *S. aureus*. Calendula has both antiseptic and anti-inflammatory properties. Myrrh and tea tree oil have antiseptic properties and topical treatment with myrrh and Echinacea could improve the cutaneous immune response. Witch hazel with its tannins has antimicrobial activity and other components in the herb confer anti-inflammatory effects. Golden seal contains antimicrobial alkaloids (it should not be combined with tannins). Anti-inflammatory herbs for topical use include chickweed (*Stellaria media*), comfrey (*Symphytum officinale*) and licorice.

• In severe cases *Tylophora indica* can be used to suppress the Th-2 cell response. It should be used very cautiously in children (with appropriate low doses) and only after experience has been gained with its application in adults.

• A Chinese herbal formula containing 10 herbs (Zemaphyte) successfully controlled atopic dermatitis in clinical trials.¹⁹ A clinical trial found that the formula decreased the number of IgE-reactive macrophages in the skin of eczema patients and this finding was associated with clinical improvement.²⁰

• Therapeutic baths can be of value in atopic dermatitis. A bag of oatmeal suspended in a coarse cloth (run the bath water out of the tap through the bag and then suspend the bag in the bath) will soothe irritated and inflamed skin. Antiseptic essential oils in a bath will help to correct skin microflora imbalance.

Case Histories

Case History 1

An 8-year-old girl had eczema which started about 4 years ago. It was worse each summer, perhaps as a result of swimming in the local pool. The mother had tried removing dairy products from her diet, with not much success. The girl seemed to be eating quite a few sweet biscuits and so it was suggested that these be reduced. Her doctor had prescribed a topical steroid. On examination the lesions on her face showed signs of a secondary infection.

The following formula and dosage was prescribed (based on her weight of 25 kg):

<i>Echinacea angustifolia</i> root	1:2	50 mL
<i>Scutellaria baicalensis</i>	1:2	25 mL
<i>Urtica dioica</i> leaves	1:2	25 mL
Dose: 3 mL with water twice a day		100 mL

Topical application of a chickweed cream was also recommended for the lesions and one 500 mg capsule of evening primrose oil was to be broken and taken internally or applied topically (on the abdomen where the skin is thin for dermal absorption) twice a day.

On review after 4 weeks the rash had improved substantially and her face was clear. Use of the local swimming pool did not

seem to aggravate the condition as it did previously. Treatment was continued for several months and improvement was maintained.

Case History 2

A woman age 23 years presented with severe atopic dermatitis. It was itchy and infected and affected her hands, legs, scalp, face (around the lips) and chest. The condition started about 6 years ago and was currently being treated with topical steroids. It was worse premenstrually and she had a family history of atopy and suffered herself from asthma.

She was prescribed the following formula (feverfew for antiallergic effects):

<i>Astragalus membranaceus</i>	1:2	25 mL
<i>Echinacea angustifolia</i> root	1:2	25 mL
<i>Centella asiatica</i>	1:2	20 mL
<i>Tanacetum parthenium</i>	1:5	10 mL
<i>Bupleurum falcatum</i>	1:2	20 mL
Dose: 5 mL with water three times daily		100 mL

In addition she was advised to avoid all dairy products, take chaste tree 1:5 2.5 mL with water on rising each morning and 3 x 1000 mg evening primrose oil capsules per day. A chickweed cream was prescribed for topical application.

Four weeks later her condition was about the same. She had made a decision (without seeking my advice) to completely stop her steroid cream and her rash grew much worse (a characteristic rebound effect). Since then it had stabilized, but not improved. Treatment was continued.

After another 8 weeks of treatment there was a significant improvement in her skin condition. Treatment was continued over several more months after which her atopic dermatitis had more or less subsided.

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