

# INTEGRATIVE APPROACHES TO ECZEMA



# EDITOR'S PROLOGUE

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*An Investment in knowledge always pays the best interest.*

*- Benjamin Franklin*

Eczema is a very challenging disease: partly because we are still in the infancy of understanding its complex causes, and partly because it takes tremendous effort to manage eczema at home. Treating eczema takes devoted effort from patients, caregivers, and practitioners. There is an enormous amount of research and text written about eczema, but nearly all of it is directed towards practitioners. This book is really the first of its kind, written for our patients and caregivers who are battling eczema. It is written in the integrated voice of a group of dermatology practitioners across multiple disciplines, including Western, Naturopathic, traditional Chinese, and Ayurvedic medicine. Some of our authors have devoted their entire career to bettering the lives of those living with eczema. I greatly appreciate the help of our authors who contributed to this book.

This book would not have been possible without the advice and questions I have received from my patients and their caregivers, who constantly stimulate my scientific inquiries in eczema. I am forever indebted to Dr. Lawrence Chan and Dr. Peter Lio, who have graciously introduced me to the field of dermatology and fostered my love for eczema. Thank you for putting up with me through medical school and residency. I am also truly grateful to Dr. Raja Sivamani who has been my role model as an “academic ironman” and constantly pushes me to the next level in my career.

This book is a labor of love from our team at LearnSkin and would not be possible without my co-editor, Dr. Raja Sivamani, who worked tirelessly to make this project come true. Thanks to Dr. Hadar Lev-Tov, Joseph Alban, and Dr. Jason Derico for their valuable advice and review of this book.

As always, I owe a great debt of gratitude to my parents who brought me from China and opened endless opportunities in the U.S. They have supported me in my pursuit of my own version of the American Dream.

Finally, many thanks to my husband, Khiem Tran, who has ALWAYS believed in me, who has been my cheerleader, skilled proofreader, and science whiz.

***Vivian Shi, MD***

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# ABOUT LEARNSKIN

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**LearnSkin** was developed by leading dermatologists and integrative medicine practitioners to support integrative dermatological education throughout the healthcare community. With skin being the number one driver of doctor's visits, the goal is to share the latest in scientific research and treatment options in dermatology for both Western and Eastern medicine to meet the growing demand for responsible, high-quality, evidence-based education that bridges conventional and complementary medical approaches.

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The mission of LearnSkin is to facilitate the discovery and application of new knowledge in cutaneous science to clinical practice by employing needs assessment data, identified professional education, and clinical treatment gaps. LearnSkin's programs are designed to improve knowledge, competence, performance, and patient outcomes by improving the quality and safety in dermatology and aesthetics.

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# 1

## Chapter 1 An Integrative Perspective on Eczema

Vivian Shi, MD and Raja Sivamani, MD, MS, AP

### Key Takeaways

- Integrative approaches to eczema is a growing field which combines perspectives and treatment strategies from multiple medical disciplines, including but not limited to Western, Traditional Chinese, Naturopathic, and Ayurvedic practices.
- Proactive, rather than reactive treatment modalities are preferred. Proactive treatments include daily moisturizer use, healthy bathing habits, wet wraps to improve skin hydration, and stress reduction practices. In reactive treatments, topical steroids and other anti-inflammatory medications and antibiotics are often needed.
- Successful eczema treatment requires close communication, trust, and teamwork between the patient, caregiver and healthcare provider. The goal is to improve quality of life by decreasing severity, duration, and frequency of eczema flares.



### What Is Atopic Dermatitis (Eczema)?

Atopic dermatitis is also known as eczema. It is one of the most common skin conditions that affects up to 20% of children and 3% of adults worldwide.<sup>1</sup> Because of its chronic nature, eczema can cause immense psychosocial and economic burden.

“Eczema” originates from Greek and means “boiling over,” which fittingly describes the symptoms that people with eczema

experience. Their skin is itchy, inflamed, dry and often feels like hot boiling water. Itching and sleep disturbances not only cause school, work, and relationship problems for the patient, but also put stress on parents and caregivers, negatively impacting family dynamics. Although the exact cause of eczema is still not completely understood, researchers and clinicians believe that it is due to a combination of reasons, including genetic mutations, environmental triggers (irritants, allergens, and infections), damage in the skin’s natural protective barrier, overactive immune system, abnormal itch sensation, and changes in the skin and gut microbiome.<sup>2</sup>

## What Does It Mean to Be Integrative?

Integrative medicine is a concept that now incorporates many different perspectives. Traditionally, the term referred to integrating the Western medical perspective with other medical traditions. However, integrative medicine has become more than a simple combining of the Western and non-Western approaches.

We now realize that treatments and therapies need to have a holistic approach to the patient, even within the Western approach. Historically, Western medicine focused on pharmaceutical medication based therapies. However, with increasing demand for understanding how lifestyle choices and habits can alter eczema, integrative medicine has come to mean an approach that combines a pharmaceutical medication based approach along with therapies that focus on lifestyle. Some examples of lifestyle changes include dry skin care, bathing habits, alteration of diet, and the use of nutritional supplements.

## Proactive vs. Reactive Treatments for Eczema

Eczema is a chronic condition that requires constant attention and treatment. Unfortunately, there is no permanent cure, although many children will improve as they get older.<sup>3</sup> On the other hand, many will continue to have eczema into their adulthood, and it is important to develop a plan to have constant control and management of the eczema. The goal for eczema care is to improve quality of life by decreasing the severity, duration, and frequency of eczema flares. Practices for eczema can be largely grouped into proactive and reactive treatments; some practices are done for both proactive and reactive treatments:

### *Reactive Treatments*

- Use of steroids and other anti-inflammatory medications when the eczema flares
- Use of antibiotics when there is a secondary infection in the skin
- Wet wraps to improve skin hydration
- Stress reduction and relaxation practices

### *Proactive Treatments*

- Daily moisturizer use
- Healthy bathing habits (such as bleach baths)
- Wet wraps to help improve skin hydration
- Stress reduction and relaxation practices

## **Lifestyle Changes and Quality of Life**

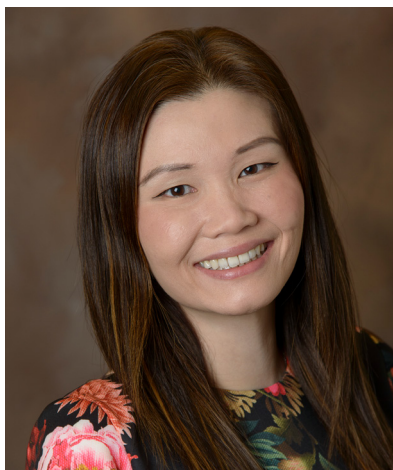
Treating eczema takes much more than applying a cream or taking a pill prescribed by the health care provider. It requires close communication, trust, and teamwork between the patient, caregiver and the health care provider. Lifestyle change remains the pillar of treatment success for eczema and encompasses thoughtful changes in skin care and diet, stress reduction, and adherence to eczema treatment plans. The ultimate success in eczema management is to improve quality of life and to restore personal health, well-being, and the healthy dynamics between our families and communities.

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# 2

## Chapter 2 Bathing Tips for Eczema

Jason Derico, ND

### Key Takeaways

- In addition to cleanliness, bathing can reduce emotional stress and anxiety that are associated with itch and flare in eczema.
- Optimal bathing habits include once daily, 10-minute baths in lukewarm water. The data on whether hard water harms eczema skin is inconclusive.
- Frequent and hot baths can worsen itching in eczema. Gentle soaps without dyes, fragrances, and scents should be used.
- Evidence shows that bathing additives such as bleach, bath oils (such as *Retama raetam*, *Artemisia princeps*, and *Matricaria recutita*) and magnesium salts can be helpful in eczema.

People with atopic dermatitis (eczema) often struggle to find the most suitable products and lifestyle habits for their condition. Generally speaking, people tend to figure out what works best for them over time, but it is possible that certain remedies may provide relief at one point in time and then work poorly at other times, or vice versa.



Within the eczema community, hygiene is a common topic of discussion. Ideal bathing habits can be especially difficult for people with eczema to determine because no technique works for everyone, and each method of cleanliness can affect these patients in different ways. The length of time, the purpose, the products used during or after, and even the water itself may influence the symptoms.

## Intent

Bathing is often more than just cleanliness. Even the purpose of bathing can be much more than one would initially think by considering the psychological connections to eczema. Emotional stress and anxiety are associated with itch and flares in people with eczema.<sup>1-3</sup> So if the purpose and result of the bath are stress reduction, it is possible that these people may receive more benefits from bathing than simply cleansing.



## Bathing Habits

How often, for how long, and at what temperature should one with eczema bathe? The answer is that those factors should be tailored to each individual, but there are some general patterns to consider. Two studies found that the severity of the condition is not

related to the frequency of bathing,<sup>4,5</sup> but may be associated with a longer duration of bathing.<sup>5</sup> Higher temperatures affect eczema too. Water set to 113° F (similar to a very warm bath or shower) can worsen itching in those with eczema.<sup>6</sup>

On the other hand, short baths in warm mineral rich water may be helpful. Researchers showed that a twice daily, 10-minute soak in a hot spring bath that was 107° F improved skin symptoms in 76% of patients with eczema.<sup>7</sup>

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## Bath Products

The products used in or during the bath can also make a difference. This can include products used on the skin when in the bath, as well as the products added to the bath itself.

The products used on the skin can have dramatic effects on the symptoms of eczema. Some people can be sensitive to the dyes, fragrances, and scents that are added to some products.<sup>8</sup> One study compared hand-washing practices and found that the group using soap had the largest worsening in symptoms, followed by high pH solutions, then sanitizer.<sup>9</sup> An evaluation of general hygiene habits found that patients with eczema are more likely to use bath oils than soap because the bath oils may be gentler on the skin.<sup>10</sup>

The products used in the water can also improve or worsen symptoms of eczema. A common product used in baths by patients with eczema is a small amount of chlorine bleach in the water to create a dilute bleach bath. Chlorine is the base for most types of bleach. A randomized, placebo-controlled study found that patients with eczema who soaked in a dilute bleach bath for 10 minutes twice per week showed significant reduction in symptoms.<sup>11</sup>

Bath salts, like those found in Epsom salt (magnesium sulfate) and magnesium-rich dead sea salts, can improve water loss, skin hydration, and redness in patients with eczema.<sup>12</sup>

Essential oils are commonly added to bath water for many reasons, but they can have the potential to help or harm, depending on the essential oil. Certain essential oils like lavender, for example, carry higher risk to cause skin allergies,<sup>8</sup> while others can be very soothing. Oils of *Retama raetam*, *Artemisia princeps*, and *Matricaria recutita* can all reduce itchiness.<sup>13</sup>

## The Water

The water used for the bath may make a difference in eczema symptoms and possibly even change the chances of developing eczema later in life. Exposure to hard water early in life may increase the risk of developing childhood eczema later in life,<sup>14,15</sup> though water softeners do not necessarily provide any additional benefit to those who already have eczema.<sup>16</sup>

In conclusion, bathing can play a role in eczema in many different ways. Each bathing approach should be evaluated on an individual level, as the results of each treatment can vary between patients.





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# 3

## Chapter 3 Tips on Managing Eczema at Home

Lindsay Strowd, MD, Sarah Taylor, MD, MPH

Steve Feldman, MD, PhD

### Key Takeaways

- Eczema patients should use skin products that are “fragrance-free.” Clothing and linen should be loose-fitting, soft, and made of cotton.
  - Cool mist room humidifier and frequent moisturizer use (especially right after bathing and before bedtime) can result in more hydrated skin.
  - Hand eczema can be minimized by wearing gloves when preparing food and cleaning.
  - Sleep quality can be improved by setting a sleep routine and calm environment with cool ambient temperature.
  - Stress-relieving techniques, acupuncture/acupressure and omega-6 fatty acid supplementation with evening primrose oil, borage oil, and black currant oil have shown to help eczema.
- 



Caring for eczema (also known as atopic dermatitis) can feel overwhelming for patients and their families. However, there are many tips and tricks to improving atopic dermatitis in your own home that cost relatively little but can make a big difference in how you feel. One of the most common complaints of those who suffer from atopic dermatitis is the intense itch sensation that plagues patients

both day and night.<sup>1</sup> In fact, atopic dermatitis has been called “the itch that rashes” due to itch being the hallmark feature of this disease. Managing the itch associated with atopic dermatitis begins with a “clean” personal care regimen. This means eliminating products from one’s daily personal care regimen that can increase itch and irritation in the skin.

One of the most common ingredients in products that can exacerbate atopic dermatitis is fragrance. Fragranced lotions and soaps should be avoided in patients with atopic dermatitis. Products labeled “unscented” are not fragrance-free, as many of these products contain a

masking fragrance. Look for products labeled fragrance-free, and then look on the ingredient label list to make sure fragrance is not listed as an ingredient. This also applies to clothing detergent products. Laundry detergent is now available in fragrance-free varieties. Dryer sheets and fabric softeners should also be avoided, as these can contain ingredients irritating to the skin of people with eczema. Natural, soft fiber clothing and bedding should be used over synthetic fibers, which are less “breathable” in place of rough natural fibers, such as wool, which can exacerbate itch. Look for clothing items made of cotton or linen. This includes undergarments such as brassieres, underwear, and socks. Loose-fitting clothing tends to be less irritating to the skin than tight clothing that rubs against skin.

Another tip for caring for atopic dermatitis at home is maximizing the moisture content of the skin. The skin of people with eczema contains less moisture than normal skin due to disrupted barrier function. The barrier function of the skin refers to its ability to hold water in. When this function is disrupted, the result is increased water loss through the skin, which leads to dryness and itch.<sup>2</sup> Atopic dermatitis will often flare in weather conditions with changing or low humidity, such as winter months, due to decreased moisture content in the air. Using a simple cool mist room humidifier at home can increase the moisture content of the air, resulting in more hydrated skin. Avoiding extremely long and hot showers and baths is another way to prevent excessive moisture loss from the skin.

Applying fragrance-free moisturizer immediately after bathing is another good way to keep skin hydrated, as the blood vessels in the skin are dilated, and the skin is better able to absorb topical products during this time. Avoid excessive washing of the skin, especially the hands, as this can cause further irritation of sensitive skin.



Other products that come into contact with skin can cause further irritation and should be avoided. Certain raw food products are known to cause an irritant dermatitis with exposure, such as pineapple, garlic, onions, and tree nuts. Wearing gloves when preparing raw foods can

help prevent hand irritation. Similarly, cleaning products can be very irritating to the skin as many cleaning products are basic pH solutions, which is in opposition to our natural acidic skin pH. Wearing gloves when cleaning dishes, countertops, or other household surfaces can help protect the skin.

Atopic dermatitis has been shown to disrupt sleep cycles and negatively impact quality of sleep. Poor sleep hygiene can have a profound impact on our overall well-being and health.<sup>3</sup> Creating a sleep routine and calm sleeping environment is the first step to improving sleep quality. Avoiding distractions such as television and electronic devices is important prior to sleep. Following the same routine each night helps the body recognize it is time to sleep. Fall asleep in a quiet dark room at roughly the same time each night. Ensure the temperature in the room is cool and remember to use a room humidifier if the air is dry. Applying topical moisturizers or topical medications right before bed may also help temporarily soothe the skin, allowing for better sleep induction. If anti-histamines are a part of your atopic dermatitis treatment plan, these are often sedating and can be taken in the evening before going to sleep.

Using the medications prescribed by your doctor for atopic dermatitis on a consistent basis will also greatly improve your skin. Many patients find it helpful to set an alarm or notification on their cell phone or smart device to remind them when it is time to use their medication. Keeping the medication in a highly visible area, close to another item you use regularly, can also serve as a reminder. A great location is next to your toothbrush, since most people brush their teeth twice a day. If medication is kept away in a cabinet, people are more likely to forget to use it. For pediatric patients, using simple reward systems such as a sticker chart can help engage the patient in the treatment plan while increasing compliance.



Complementary and alternative interventions are increasingly recognized and used in addition to conventional treatments of atopic dermatitis. While the number of studies on the use of alternative medications for eczema continues to grow, the relatively poor quality and small size of most studies to date limit their usefulness to physicians. However, there is a slowly growing body of evidence about these medications that either show some usefulness in the management of atopic dermatitis or no, or unknown, usefulness.

A combination of self-care behaviors as previously outlined along with medical therapies based on sound scientific evidence is the foundation of the treatment of atopic dermatitis. For those interested in augmenting their treatment regimen, there are some promising complementary therapies that may either help in improving and controlling atopic dermatitis, or at the very least, not harm.

### ***Potentially Useful:***

Stress-relieving techniques (guided imagery, meditation, hypnosis). Many skin disorders such as atopic dermatitis are strongly linked to psychological stress, and stress-relieving techniques for those with atopic dermatitis may decrease disease severity and improve the quality of life as far as improvement in itching and scratching, sleep disturbance, and mood. Acupuncture, acupressure, and omega-6 fatty acid supplementation with GLA (gamma-linolenic acid, evening primrose oil, borage oil, black currant oil) have demonstrated improvement in these parameters as well.

### ***Usefulness Unknown:***

Chinese herbal preparations, homeopathy, massage and biofeedback do not have well-demonstrated effectiveness due to the small amount of quality trials in humans with an adequate number of participants. Omega-3 fatty acids (fish oil), vitamin E, vitamin D, vitamin B12 and probiotics are not supported by any similar sort of evidence to date as well.





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# 4

## Chapter 4 Combating Eczema Itch

Anna Fostini, MD and Gil Yosipovitch, MD

### Key Takeaways

- Ceramide-containing moisturizers and fragrance-free cleansers with low pH are helpful in minimizing itch.
- Topical steroids, calcineurin inhibitors (pimecrolimus, tacrolimus), and phosphodiesterase-5 inhibitor (Crisaborole) decrease itch by decreasing skin inflammation. Other local anesthetics that can help with itch are pramoxine, menthol, and ketamine, lidocaine, and amitriptyline that work by turning off itch receptors on nerve fibers.
- Systemic anti-inflammatory medications are used to treat severe itch in eczema. Sedating antihistamines do not directly decrease itch but help the patient sleep better.
- Antidepressants, neuroactive drugs (gabapentin and pregabalin), and several newer drugs (butorphanol, nalbuphine, asimadoline and serlopitant) dampen itch nerve fiber activity.
- Ultraviolet phototherapy and stress-reduction, acupuncture, and probiotics can be used as adjunctive treatments for itch associated with eczema.

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The hallmark feature of atopic eczema is itch, which is usually not responsive to the typical anti-itch oral medications known as antihistamines. Itch promotes scratching, and scratching worsens itch, causing a vicious cycle. The impact of eczema-related itch can range from mildly distressing to disabling. Eczema can have a profound effect on the quality of life of patients and their families, interfering with sleep, behavior, and mood, which can lead to absences from school and/or work.

The treatment of itch in eczema includes good skin care, topical (applied on the skin) creams, and in severe cases, systemic drugs (taken orally or injected). Skin care is critical for successful treatment of itch and can help prevent flare-ups. It may seem annoying, but sticking to it can make all the difference.

## Skin Care and Topical Treatments

Topical therapies are central to the management of itch in eczema. Emollients and moisturizers are important in treatment of itch, because they soften the outermost layer of dry skin (stratum corneum) and improve the skin's barrier function. The daily use of fragrance-free products, enriched with ceramides and other lipids, prevents itch onset and provides symptomatic relief for itch associated with current skin lesions. Emollients are best applied immediately after bathing.

Cleansers with a low pH should be selected, because they are useful in improving skin barrier function by maintaining the natural acidic pH of the skin. Since eczema features a hyperactive immune response, drugs that suppress the immune system are effective. Topical glucocorticoids are frequently used to treat patients with itch. These medications help to relieve itch through their anti-inflammatory effect, rather than acting as a direct anti-itch. Glucocorticoids use can be tailored through the prescription of varying potencies, which range from mild to very strong, and the use of different vehicles, such as gels, creams, ointments or oils. Their use should be limited to short periods and avoided in cases of generalized cutaneous disease, in the absence of a primary rash or in prolonged daily treatment. Local adverse effects associated with long-term use may include discoloration and fragility of the skin, acne, and dilatation of skin capillaries (telangiectasias).



In some cases, the anti-inflammatory effect of topical glucocorticosteroids is helpful but insufficient to completely abolish itch. Because of the chronic and recurrent nature of eczema, patients often require long-term treatment to relieve symptoms and prevent exacerbations. The topical calcineurin inhibitors (TCIs), tacrolimus and pimecrolimus, may be used for long-term treatment or for patients requiring treatment on delicate areas, such as the face or intertriginous areas. The efficacy is comparable with topical steroids. The reason these agents reduce itch is unclear and possibly related to a few different factors. TCIs regulate the immune response by regulating the production of cytokines, substances secreted by cells of the immune system that contribute to trigger inflammation. These agents may also have a direct anti-itch effect by turning off certain receptors for itch located on nerve fibres. Sometimes they may cause a burning sensation in the site of application, which generally decreases after repeated applications.<sup>1</sup> Crisaborole is an alternative new anti-inflammatory topical therapy that blocks a

certain substance in the skin (phosphodiesterase-4) that contributes to production of cytokines. Improvement of pruritus may be significant within one week of treatment. In clinical studies, it has shown good safety and tolerability.<sup>2</sup>

Other topicals that reduce itch contain local anesthetics such as pramoxine, cooling agents such as menthol, and a combination of topicals that target the nerve fibers containing topical ketamine, lidocaine, and amitriptyline.

## Systemic Treatment

Systemic treatments are usually necessary to treat severe itch in eczema. Antihistamines are the most widely used systemic anti-itch drugs, however itch in eczema is usually resistant to these medications. This is likely due to the involvement of many substances other than histamine that lead to the persistence of itch. The older (first generation) antihistamines (chlorpheniramine, diphenhydramine, hydroxyzine, and promethazine) have a sedative effect, enabling the patient to sleep better. When prescribed to be taken at bedtime, they are most useful because they help to break the itch-scratch cycle.<sup>1</sup> Systemic glucocorticosteroids have no direct anti-itch actions but have been effective in reducing itch due to their anti-inflammatory effects. The short-term use of systemic glucocorticosteroids is possible in cases of severe itch, but should not be prolonged for more than two weeks in order to avoid side effects. Cyclosporine, methotrexate, and azathioprine are oral drugs that work by suppressing inflammation but have a different side effect profile compared to glucocorticosteroids. Their anti-itch effects have been demonstrated in patients with eczema, and the duration of therapy may be prolonged. However not everyone is suitable for these treatments due to their side effect profile and the need for routine laboratory exams for adverse effects, such as kidney and liver failure as well as risk of infections. Patients taking these medications need to be monitored closely.

Dupilumab is a promising targeted treatment specifically for eczema that was recently launched in the US market.<sup>3</sup> This is an injectable biologic drug. It treats inflamed skin, targeting specific mechanisms of the immune system that cause eczema, in particular modulating the activity of two cytokines - interleukin 4 and interleukin 13 - and reduces itch significantly within 2 weeks of use. Another drug that has been successfully tested in atopic dermatitis patients but not yet approved is Nemolizumab, which targets against an itchy cytokine receptor called interleukin 31. The drug shows rapid and significant anti-itch effect in the first 2 weeks of use.



Promising agents that have recently displayed efficacy to reduce itch are kappa opioids, such as butorphanol. Newer drugs from these types are nalbuphine and asimadoline that have been successfully tested in atopic dermatitis. Another promising class of drugs are neurokinin 1 inhibitors. These are receptors for a molecule called substance P that is involved in itch and pain. The antiemetic drug aprepitant belongs to this group of drugs but has too many side effects and is extremely expensive. Newer drugs that are safer and have less side effects, such as serlopitant and tradipitant, are currently being tested for atopic itch.

Other drugs used to reduce itch that are not itch specific are antidepressants, such as mirtazapine, that when given in low dose, may relieve nighttime itch. Neuroactive drugs, such as gabapentin and pregabalin, that reduce the activity of nerve fibers transmitting itch may reduce itch intensity.<sup>4</sup>

### ***Ultraviolet Phototherapy***

The term phototherapy means the use of light to treat medical conditions. Natural sunlight is beneficial in certain skin conditions, in particular parts A and B of the ultraviolet spectrum. Phototherapy reduces itch in eczema by inhibiting inflammation in the skin. It may be given in combination with topical and/or systemic therapy, except for TCIs and immunosuppressive drugs. Patients should be informed that the itch may worsen in the first 2 weeks of treatment but later it will improve.

### ***Behavioral Therapies and Complementary Medicine***

Behavioral-modification therapies, including patient education regarding coping mechanisms and stress-reduction techniques may help to interrupt the itch–scratch cycle. Additionally, acupuncture and use of probiotics may complement pharmacotherapy. However, data from randomized trials of such therapies are currently limited.

## **Conclusion**

No universal treatment regimen exists that is effective in all cases of itch in patients affected by eczema. A wide variety of options are available, and the therapy should be tailored depending on itch severity and in agreement with patient and physician preferences. New promising approaches may now be offered in case of recalcitrant itch, in order to achieve the most satisfactory result.

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# 5

## Chapter 5 Role of Diet in Eczema

Rajani Katta, MD and Alexandra Vaughn, BS

### Key Takeaways

- The three main types of food allergies that can trigger eczema are 1) immediate-type which may present as lip or throat swelling, 2) delayed-type which occurs 2 days after as an eczematous-like rash, and 3) systemic contact dermatitis that occurs after hours to days after direct skin contact to allergenic chemicals in foods.
- When testing for food allergies, any positive skin prick test or blood test should ideally be further confirmed by a food challenge test.
- Probiotics, prebiotics, and consuming healthy fats (omega-3 polyunsaturated fatty acids and monounsaturated fats) are helpful for eczema skin.



We are frequently asked questions about the role of diet in eczema. “Should I go gluten-free? Or give up dairy? Are there any foods that might help my eczema?”

As more research has been done in this area, we have discovered that diet may indeed impact eczema. But there are some important points to remember:

- 1. Some foods may act as eczema triggers, but only in some people.*
- 2. Testing is usually required to identify food triggers for eczema.*
- 3. Research suggests that certain foods may be helpful for eczema. While the research isn't conclusive, foods such as fiber-rich vegetables and healthy fats may be helpful. Since these are great for overall health, we recommend them.*

## Food Triggers in Atopic Dermatitis (Eczema)

For some people, but definitely not all, certain foods will make their eczema worse. In studies, the group most likely to be affected are infants and children with moderate to severe atopic dermatitis.<sup>1</sup>

There are three main types of food allergies that can trigger eczema. The first is called immediate-type, IgE-mediated allergy, and it is what many people think of when they think of food allergy.<sup>2</sup> A child eats peanuts, and within minutes their lips start to swell. It is important to recognize, though, that other symptoms can occur (either one or a combination) from minutes to hours later. These include skin, breathing, gastrointestinal, or other symptoms. For some, this will worsen their eczema.

Another type of food allergy is called a delayed eczematous reaction. In this reaction, a skin flare may occur hours to 2 days after eating a certain food.<sup>3</sup> For both of these allergies, the triggers are peanuts, tree nuts, cow's milk, eggs, soy, wheat, and shellfish.<sup>4</sup>

The other main type of food allergy is called systemic contact dermatitis (SCD), which causes a flare hours to days later. The most common type of SCD, identified by patch testing, occurs in patients with allergy to fragrances in their skin care products. These fragrance additives are related to certain foods, including tomatoes, citrus, and cinnamon.<sup>5</sup>

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## Testing for Food Triggers

One of the reasons we recommend testing is because food allergies can be hard to figure out just by paying attention. It is also very common to suspect a food allergy even when there's not one. In fact, studies have found that 50-90% of presumed food allergies are not actually allergies at all.<sup>1</sup> This is why, in general, we recommend testing before you stop eating a certain food.

Testing for food allergies can be complex. Skin prick tests and blood tests (serum IgE tests) may be helpful when testing for immediate type reactions, since they test for what we call "sensitization." However, many patients who are sensitized to certain foods will never actually develop an allergic reaction to that food. That's known as a false positive test. For this reason, many patients with positive blood or skin tests will require further testing for confirmation. This is known as a food challenge test. For delayed eczematous reactions, the only known accurate test at this time is a food challenge.

In a food challenge, a patient is given the suspect food (or a placebo) and then monitored. Because of the risk of serious reactions, these tests are administered in a clinic or hospital, and patients are asked to monitor their skin for up to 48 hours later.



## **Beneficial Foods: The Role of Prebiotics and Probiotics**

There has been significant research into whether certain foods or supplements may help in the treatment of eczema. In one summary paper, it was found that the use of synbiotics for at least 8 weeks helped in the treatment of atopic dermatitis in adults and children over the age of one.<sup>6</sup>

Synbiotics are a combination of prebiotics and probiotics. This study raised a number of questions though. For one, we do not know the ideal type of prebiotic or the ideal type or dose of probiotics, since different studies have used different ones.

How does this translate to diet recommendations? Prebiotics are substances that help support the growth of “good” bacteria in our gut. The most common types of prebiotics are plant fibers.<sup>7</sup> That’s why to help the good bacteria in our gut, researchers recommend eating a wide variety of fiber-rich foods. This translates to more fruits and vegetables, such as artichokes, onions, lentils, and beans.

Probiotics are living organisms that provide a health benefit and may be found in foods or supplements. While we do not know the best type or dose of probiotic supplement, the studies found that probiotics containing multiple strains of bacteria were best. That is why we suggest eating more foods that contain live active cultures, although more research is needed on their benefits.<sup>8</sup> These include foods such as yogurt, kefir, miso, sauerkraut, kimchi, and many more.

## **Beneficial Foods: The Role of Healthy Fats**

Research has suggested that consuming healthy fats may help the skin barrier. In one study, volunteers ingested a daily dose of flaxseed oil for 12 weeks. At the end of the study, they had more skin smoothness and hydration. They even had less sensitivity to irritation.<sup>9</sup> We recommend adding healthy fats to your diet, which means foods rich in monounsaturated fats and polyunsaturated fats. This includes fatty fish (such as salmon), avocados, nuts (such as walnuts), and seeds (such as ground flaxseeds).

**Table 1. Summary of Dietary Factors in Eczema**

**Types of Food-Triggered Reactions [Identified by Testing]**

<b>Type 1 Allergic Reactions</b>	<p>Immediate-type, IgE-mediated allergy<sup>2</sup></p> <p>One example – immediate lip swelling after eating peanuts</p> <p>Other symptoms may occur minutes to hours later: rash, difficulty breathing, gastrointestinal symptoms, other</p> <p>May worsen eczema in some people</p> <p>Top trigger foods: nuts, eggs, milk, wheat, soy, shellfish</p>
<b>Delayed Eczematous Reactions</b>	<p>Skin flare may occur a few hours to two days after eating a particular food</p> <p>Top trigger foods: nuts, eggs, milk, wheat, soy, shellfish</p>
<b>Systemic Contact Dermatitis</b>	<p>Occurs a few hours to days after exposure to offending agent</p> <p>One example is triggered by foods related to fragrance additives</p> <p>Top trigger foods: tomatoes, citrus, cinnamon</p>

**Foods that May Help**

<b>Prebiotic Foods</b>	<p>Substances, such as plant fibers, that support the growth of beneficial bacteria in the gut</p> <p>Foods rich in plant fibers include: legumes, vegetables, fruits, and whole grains</p>
<b>Probiotic Foods</b>	<p>Fermented foods contain living strains of organisms called probiotics that may provide health benefits, including for skin conditions such as eczema.</p> <p>Probiotic-containing foods include: yogurt, sauerkraut, kefir, kombucha, lassi, miso, natto, kimchi, tempeh, and others</p>
<b>Healthy Fats</b>	<p>Consuming healthy fats such as omega-3 polyunsaturated fatty acids and monounsaturated fats may help the skin barrier and improve skin sensitivity.</p> <p>Foods rich in healthy fats include: fatty fish (ex – salmon), avocados, nuts (walnuts), seeds (ground flaxseeds), and others</p>

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**Alexandra Vaughn** is a 4th year medical student at Drexel University. She graduated from BYU in 2013 with a degree in Exercise Science. Alexandra has great passion for dermatology and believes healthy skin is a reflection of internal health and harmony. She has been a personal trainer and lifestyle coach for the past 8 years, and believes systemic diseases can be prevented and reversed through a plant-based diet and proper exercise. Over the past 3 years, she has found a special niche in her research as she has studied the effects of plants and foods on skin health. Alexandra's goal as a future physician is to help others achieve optimum skin health and overall well-being through a plant-based lifestyle and individualized skin care routines.



# 6

## Chapter 6 Essential Fatty Acids for Eczema

Michael Traub, ND

### Key Takeaways

- Polyunsaturated fatty acids (omega-3 and omega-6 fatty acids) supplementation can improve eczema severity, decrease skin inflammation, itch, and lower skin water evaporation in people with eczema.
  - Omega-3 fatty acids can be obtained in cold water fish.
  - Omega-6 fatty acids are derived from plant sources such as hemp seeds, evening primrose, borage, black currant seed, and flaxseed oil.
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### Essential Fatty Acids for Eczema

The two main polyunsaturated fatty acids are known as omega-3 and omega-6 fatty acids. These have both shown safety and effectiveness for prevention and treatment of eczema. Their structural and immunologic roles have been measured in the “Scoring Atopic Dermatitis” (SCORAD) index and in improvements in inflammation, itching, trans-epidermal water loss (TEWL) and expression of inflammatory mediators.

### Fish Oil

The ratio of omega-3 to omega-6 fatty acids has been shown to be lower in patients with atopic dermatitis. The vast majority of studies have demonstrated that omega-3's from cold water fish and fish oil are beneficial for prevention and treatment of eczema.<sup>1</sup> In a study involving 2,641 children and their mothers, the intake of foods rich in omega-6 polyunsaturated fatty acids during pregnancy significantly increased the risk of eczema in the offspring, and foods rich in omega-3 polyunsaturated fatty acids decreased that risk.<sup>2</sup> In general, studies suggest that omega 3 fatty acids from fish are effective in prevention of eczema and reduction in skin inflammation, and omega 6 fatty acids from plant sources (hempseed, evening primrose, borage, black currant seed and flax seed oil) may be beneficial in repairing the barrier function of the skin in eczema (results are inconsistent).<sup>3, 4</sup>



Borage oil has been shown to be beneficial in prevention and reduction of itching along with TEWL in children (100mg/d) and adult (360-720 mg/d) patients with eczema.<sup>5,6</sup> In a study involving 20 patients with eczema, participants were randomly assigned to consume either 2 tbsp of cold-pressed hempseed oil (rich in omega-6 and omega-3 fatty acids) per day or 2 tbsp of placebo (cold-pressed extra virgin olive oil) per day for an 8-week period, which was followed by a 4-week washout phase, after which the groups were crossed over for another 8-week intervention period. Results found that subjects who consumed hempseed oil reported significant improvements in skin dryness and itchiness compared to placebo, in addition to decreases in TEWL and eczema medication usage.<sup>7</sup>



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# 7

## Chapter 7 Role of the Skin Microbiome in Eczema

Raja Sivamani, MD, MS, AP

### Key Takeaways

- The skin microbiome is altered in people with eczema, characterized by decreased skin microbiome diversity, an overabundance of 'bad' bacteria such as *Staphylococcus aureus*, and decrease in 'good' bacteria such as *Staphylococcus epidermidis*.
  - Preventive approaches to keeping a balanced skin microbiome include bleach baths, antibiotic ointments in the nose, and regular moisturizer use.
  - Reactive approaches to maintaining a balanced skin microbiome are topical or oral antibiotics to treat skin infections and topical steroid use to reduce skin inflammation.
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Trillions of bacteria normally live within and on our bodies. The bacteria along with their byproducts are collectively known as the microbiome.<sup>1</sup> Normally, these bacteria live in harmony as a community. There are many different types of microbiome communities in the body, ranging from the gut microbiome to the mouth microbiome to the skin microbiome. In eczema, medical researchers have looked closely at the skin microbiome and compared how it changes in the presence of eczema.

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### The Skin Microbiome Shifts in Eczema

The microbiome makeup and diversity appears to shift in those with eczema, especially when their eczema becomes inflamed and flared. Medical researchers answered this question by following people with eczema before, during, and after a flare of their eczema.<sup>2</sup> When eczema was well controlled, the skin microbiome were more diverse, and the diversity decreased during a flare. In other words, there were a greater number of different bacteria on the skin before an eczema flare, and the number of unique bacteria reduced during a flare. The researchers went one step further to identify *Staphylococcus aureus* as the bacteria that became dominant during a flare. The shift in the microbiome toward *Staphylococcus aureus* occurred even before the eczema flared, raising the possibility that shifts in the microbiome might predict an eczema flare. Once the eczema was brought under control with treatment, the skin microbiome returned to a state where balance and diversity of the bacteria were restored.

The researchers conducted a second study where they looked at how bacterial communities were different between children with more severe eczema compared to those with less severe eczema.<sup>3</sup> Children with more severe eczema tended to have overgrowth of the *Staphylococcus aureus* strain of bacteria while those with less severe eczema had an overgrowth of *Staphylococcus epidermidis*, which is often part of the normal skin bacteria. When researchers applied the *Staphylococcus aureus* bacteria from those with eczema to the skin of mice, they triggered an inflammatory response similar to eczema. The researchers showed that *Staphylococcus aureus* bacteria may partially drive the inflammation in severe eczema.

### **Greater Microbiome Diversity May Be Healthier**

Diverse microbiome communities are rich in many different types of bacteria and have been associated with healthier skin in eczema. In the case of eczema, there appears to be a predominance of the *Staphylococcus aureus* when there is a flare. However, when the microbiome remains diverse, it appears that *Staphylococcus aureus* is not able to overgrow. The reasons for this remain unclear.

### **Strategies to Keep the Microbiome Diversified**

Researchers are looking for ways to restore a healthier microbiome in people with eczema. Two approaches are either to prevent the microbiome from shifting to an unhealthy state or to restore a healthy microbiome quickly, as soon as there is an eczema flare.





## Preventative Approaches

1. **Bleach baths.** Dilute bleach baths are similar to a swimming pool. The dilute bleach is not irritating to the skin<sup>4</sup> and can help improve eczema.

2. **Antibiotic ointment in the nose.**

Researchers have shown that eczema can be improved by using bleach baths along with treatment of the nose with mupirocin (an antibiotic) to reduce *Staphylococcus aureus*.<sup>5</sup>

3. **Regular moisturizer use.** Moisturizers help keep the skin hydrated. This helps to prevent bacteria living on the skin surface from entering the skin to cause infection and allergy. Regular moisturizer helps to keep the microbiome diversified.<sup>6</sup>

## Reactive Approaches

1. **Antibiotics.** Antibiotics can help restore balance to the skin's bacterial community when there is overgrowth of one bacterium, such as *Staphylococcus aureus*. If there is fever, yellow-crust or pus draining from the skin, a physician needs to immediately evaluate the skin.

2. **Steroids.** Topical steroids are effective in reducing inflammation and in treating eczema flares. The use of steroids to reduce inflammation is associated with reducing the dominance of *Staphylococcus aureus*.<sup>2,7</sup> The goal with steroids is to use them for a short time to reduce flares and then transition to non-steroid based therapies for maintenance.

## The Overall Effect of the Microbiome

Microbiome research is an exciting and growing area of research. Changes in the skin microbiome are closely associated with eczema, but we still do not fully understand how the different bacteria are interacting with each other and our immune system.

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## Chapter 8 Nature and Nurture in Eczema

Peter Lio, MD

### Key Takeaways

- Both nature and nurture can influence a person's risk of developing eczema. Therefore, a well designed eczema management plan should address the intimate interplay between nature and nurture.
  - Nature (genetics risks): People with eczema intrinsically have "leaky skin" due to filaggrin deficiency in the skin, which increases the risk of skin allergies, dry skin, and skin infections.
  - Nurture (environmental factors): The foods we eat and the environment we live in influence our risk of getting eczema.
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### Introduction

The history of atopic dermatitis (also called eczema) is long and complicated. Even though it received the name atopic dermatitis as recently as 1933, there are remedies to treat itchy skin as far back as 1500 BCE in the ancient Egyptian medical text, The Ebers Papyrus.<sup>1</sup> The underlying cause has long been a mystery, and to a large extent, we must remain humble in the face of this complex disease. However, in the past decades, great advances have been made that shed some light into the darkness of atopic dermatitis, with contributing factors from both nature and nurture.

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### Nature

Perhaps the most exciting story under the heading of "nature" surrounds the idea of "leaky skin." The skin provides the essential functions of serving as a barrier, keeping water inside and infections, irritants, and allergens outside. When the skin is healthy, it can do this beautifully, but it is well established that a variety of factors can damage this barrier.<sup>2</sup>



Filaggrin is the name of a protein in the skin that plays a critical role in maintaining the skin barrier. The discovery that mutations in the filaggrin gene are associated with developing eczema represented a significant breakthrough in the understanding of this complex disorder and the key role of the skin barrier.<sup>3</sup> Mutations in this gene have reliably shown to be associated with developing eczema, by creating a “leaky skin” situation, that then leads to a domino effect bringing the immune system and nerves into it.

Other genes such as SPINK5 and LEKT1 have been shown to be related to an increased risk of allergies in children, and it is likely we are only at the beginning of finding the genes that play a role in the development and persistence of atopic dermatitis.

While some gene mutations can come from either the mother or the father, in other “nature” factors the mother may have more influence on the risk of developing eczema than the father.<sup>4</sup> Risks for allergy appear to be higher through maternal genes, and studies have suggested that genetic “imprinting” may play a role. Even the tiny powerhouses in the cell called mitochondria—which everyone receives only from their mother—may be involved in this phenomenon.



## Nurture

As soon as a baby starts to develop, “nurture” aspects emerge. Importantly, the increased global amount of atopic dermatitis cannot be attributed to genetics alone, so other factors are likely involved.

The “hygiene hypothesis” suggests that in the developed, modern world we are simply too clean: bathing frequently and not being exposed to as many parasites and infections as in less developed settings. Changes in the bacteria on the skin and gut (microbiota) may also be playing a role here.<sup>5</sup> A great deal of work remains to be done on this topic, but there are exciting possibilities in better understanding eczema in this area.

What the mother eats during pregnancy and breastfeeding may have some effect on developing eczema. For example, mothers who eat more vegetables during pregnancy have a lower risk of delivering babies who develop eczema in the first 2 years of life.<sup>6</sup> Another study concluded that a maternal diet high in butter and with a high omega-6: omega-3 fatty acid ratio had a higher risk of allergy in the babies, particularly allergic rhinitis (hay fever).<sup>7</sup> Studies looking at vitamins have been contradictory and somewhat confusing; it is difficult to say if specific vitamin supplements have any effect—possibly even a negative one—on developing atopic dermatitis.<sup>4</sup> Admittedly, the evidence is limited here, and further studies need to be done to better understand maternal nutrition and its effect on developing eczema. Breastfeeding has many important benefits for babies and some studies suggest it, but it is not clear if breastfeeding actually decreases the risk of eczema in babies.<sup>4</sup>

## **Nature and Nurture**

While both nature and nurture can contribute to developing atopic dermatitis, it is perhaps the combination of both that has the most dramatic effects. We have discussed that a skin barrier problem (“leaky skin”) is important in developing eczema, but it may lead to other problems, including the development of other allergies such as food allergy and asthma. Children with filaggrin gene mutations have a higher risk of developing allergies and asthma and are at increased risk for developing peanut allergies.<sup>8</sup> This is thought to be because the leaky skin allows the food allergens to abnormally pass through the skin, resulting in allergy.

It follows then that because moisturization helps improve the skin barrier, it may help prevent allergies as well. And while this still needs much study, it has already been shown in trials that moisturizing children at high risk for eczema significantly decreases the risk of developing eczema.<sup>9</sup> This is an incredibly exciting finding that suggests there could be a safe and inexpensive cure for eczema!

## **Conclusion**

For this terrible condition, it seems that both nature and nurture have roles to play. For the more severe cases that involve allergies as well, it is likely that the interplay between genetic predisposition and environmental factors trigger or worsen atopic dermatitis. As we learn more about eczema, we should be able to better address both of these areas to minimize flares, treat the condition, and with luck, even prevent or cure the disease.



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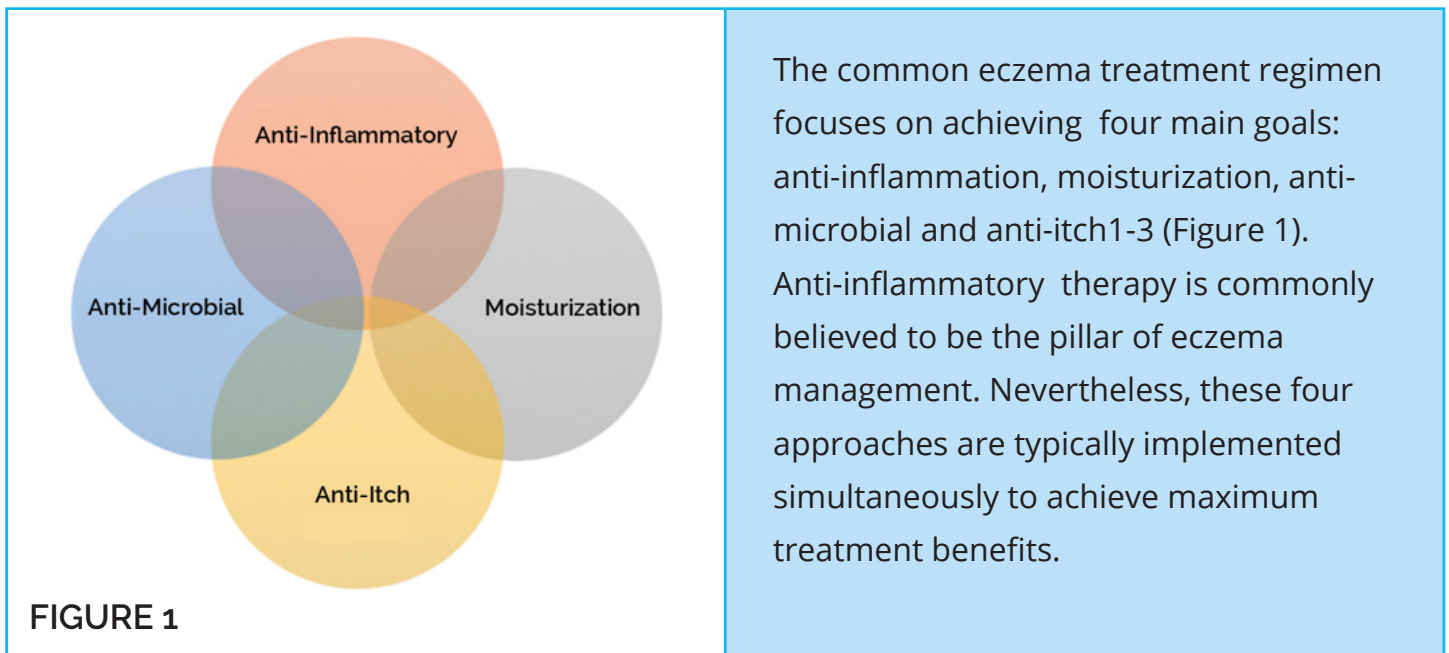
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# 9

## Chapter 9 New and Emerging Eczema Treatments Vivian Shi, MD

### Key Takeaways

- The main focuses of eczema treatment should include decreasing skin inflammation, itch, decreasing infections, and moisturization.
- Unlike traditional eczema treatments that broadly inhibit the immune system, new and emerging eczema treatments target specific segments of the immune system that are abnormal in people with eczema.
- Recently approved eczema treatments include dupilumab (an injectable medication) and crisaborole (an topically applied ointment).



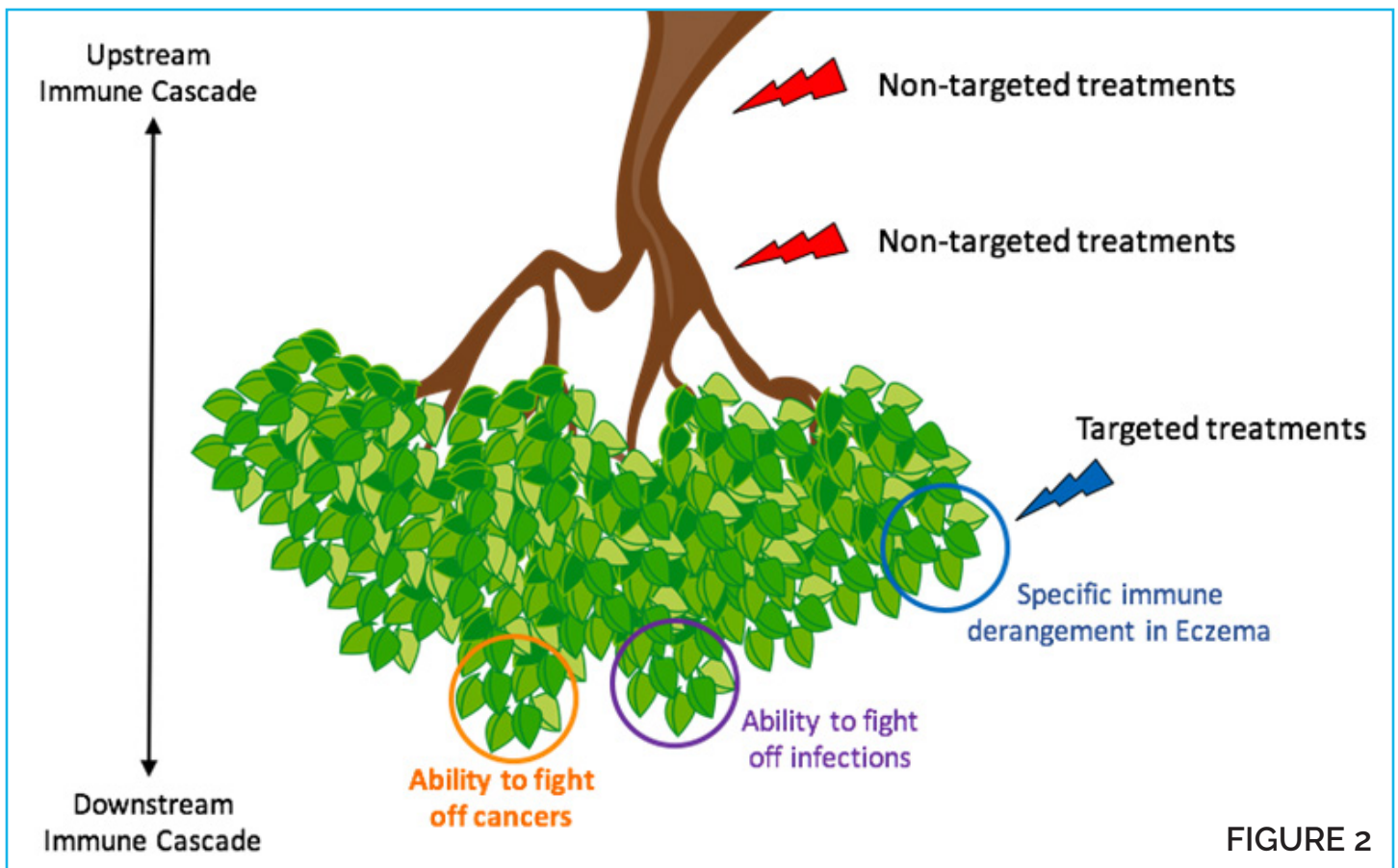
Over the past 3 decades, clinicians and scientists have made observations that significantly increase our understanding of the causes of eczema and how our immune system interacts with our genes and environment to influence the disease.<sup>4</sup> Our immune system is made up of very complex pathways that communicate with each other through chemical signaling in order to achieve immune balance. In people with eczema, one or more segment of the immune system is not regulated properly, resulting in an overactive or dysregulated immune reaction causing skin inflammation. Some of the molecules that play a role in dysregulating immune pathways

in people with eczema include interleukin-4, interleukin-13, interleukin-5, interleukin-33, interleukin-31, and phosphodiesterase-4. Several other molecules are currently being studied by researchers.



Since the 1970s, the incidence of eczema has increased dramatically, especially in developed countries.<sup>5</sup> However, development of new medications that target specific, deranged immune pathways in eczema (“targeted therapy”) has been limited. In fact, there has not been any new medication for eczema approved by the FDA for 15 years, between 2001 and 2016. Compared to psoriasis, another common inflammatory skin condition that has seen a dramatic increase in the number of new treatment options over the past 15 years, new eczema treatments have lagged behind. Medications approved for children with eczema are even more limited. In 2017, two new medications were approved for eczema: Dupilumab is an injectable medication targeting the interleukin-4 and 13 pathways,<sup>4</sup> and Crisaborole is a topical ointment targeting the phosphodiesterase-4 pathway.<sup>4</sup> We are finally entering a new era for targeted eczema treatments. Currently, several other targeted eczema medications are under development and clinical investigation.





## How Do Traditional Eczema Medications Differ From Targeted Treatments?

Our immune system can be thought of as an upside-down tree, with a tree trunk giving rise to large then small branches, and the leaves are at the very far ends (Figure 2). In eczema, small segments of the immune function are abnormal. Examples include the interleukin-4 and 13 pathways.<sup>4</sup> Traditional and targeted eczema medications both work by limiting the overactive immune function in our body and skin to lower skin inflammation. Traditional eczema medications suppress immune pathways higher up in the immune cascade (thought of as the tree trunk or large branches). On the other hand, targeted eczema medications suppress pathways much lower in the immune cascade (thought of as the small branches and leaves) to hone-in on the specific problems. Nevertheless, traditional medications are still effective in treating eczema, and some people with eczema may have more than one dysregulated immune pathway and require broader immunosuppression.

## **What Are Some Potential Side Effects of Targeted Eczema Treatments?**

Medication reactions will differ from person to person and medication to medication. Targeted medications have shown favorable side effect profiles, but doctors and researchers will continue to learn about the benefits and potential side effects of these medications. Topical medications are usually the first line treatment, when a person's eczema is mild and affects limited body surface area. Systemic medications (taken by mouth, injection or intravenously) are typically added when a person's eczema is moderate to severe, involving a large body surface area, or when topical medications cannot adequately control the disease. Since the most common route for administering systemic targeted therapy is by injection, the most common side effect is injection site reactions, including variable degrees of redness, burning, and itching. The most common side effect of targeted topical treatment is burning and stinging upon application, and can be due to the active ingredients and/or other chemicals in the topical formulation.

## **Are Any Other Targeted Eczema Medications in the Pipeline?**

Topically applied medications generally have less serious side effects and therefore receive FDA-approval more readily for use in children. Systemically administered medications are typically first approved for adults; approval in teenagers and school-aged children will likely take place over several years. Currently there is no clinical trial studying targeted eczema medications in children under 2 years old.

A few other new targeted eczema treatments are being developed and studied in clinical trials. Some of these target other interleukins, immune, and itch mediators associated with eczema. As researchers continue to decipher the intricate immune pathways involved in the development of eczema, new targeted treatments will become available. Future research will likely include studies looking at the benefit and safety of combination regimens, such as combining various traditional medications with targeted treatments, as well as combining one or more targeted treatments.

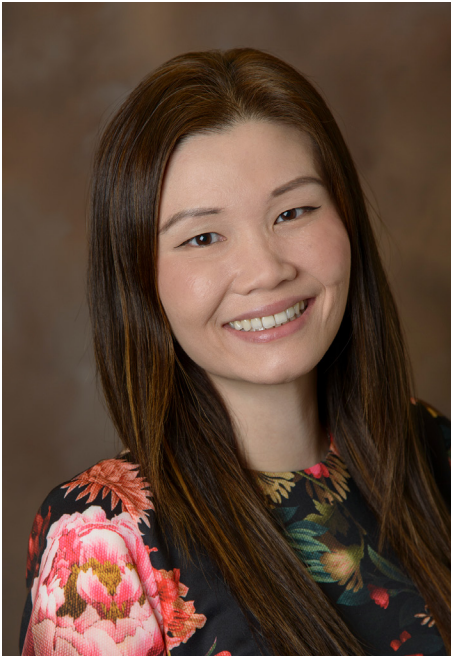


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# 10

## Chapter 10

### How to Choose a Skin Moisturizer?

Raja Sivamani, MD, MS, AP and Lawrence Eichenfield, MD



#### Key Takeaways

- There are many individual factors that make moisturizers different from one another.
- The formulation and function of the ingredients are important factors in finding the right moisturizer.
- Minimize the use of essential oils and fragrances, as these increase the risk for skin irritation and allergy.

Moisturizers are a critical part of daily skin care in those with dry skin or atopic dermatitis (referred to as eczema for this chapter). In fact, guidelines list moisturizer use as one of the most important and evidence-backed approaches for the treatment of eczema.<sup>1</sup> If only there were just one moisturizer that was perfect for everyone, that would really simplify choices. However, there is no “one-size-fits-all” approach to moisturizers.

When thinking about how to choose the right moisturizer, there are many choices and factors to consider. Here are the three “Fs” to finding the right moisturizer: Formulation, Function, Frequency.

#### Formulation

Although the words that we use for moisturizers such as “lotion,” “cream,” or “ointment” may all seem like different words for the same thing, they do have different meanings when thinking about how they act on the skin. Table 1 has a breakdown on how they work.



Credits: “LifeWithZeus at Morguefile.com”

**Table 1. Lotion vs Cream vs Ointment**

Formulation	Water Content	"Oil" Content	Overall Effect
Oil	Very low	High	Thin texture and absorbs quickly
Lotion	High	Low	Lighter texture and evaporates more quickly
Cream	Approximately equal	Approximately equal	Medium texture, heavier than a lotion but lighter than an ointment
Ointment	Low	High	Thicker and more greasy texture

For most people with dry skin or eczema, there needs to be a balance between moisturization and ease of application. Here are some of the advantages and disadvantages of each of the formulations:

**Table 2. Advantages and Disadvantages of the Different Formulations**

Formulation	Advantages	Disadvantages
Oil	<ul style="list-style-type: none"> <li>• Easy to apply</li> <li>• Absorbs easily</li> </ul>	<ul style="list-style-type: none"> <li>• May leave oily residue on hands</li> <li>• Oils vary widely depending on source</li> <li>• Potential for allergy</li> </ul>
Lotion	<ul style="list-style-type: none"> <li>• Easy to apply</li> </ul>	<ul style="list-style-type: none"> <li>• Evaporates quickly</li> <li>• May not provide enough hydration support for very dry skin</li> <li>• May use emulsifiers that can dry the skin<sup>2</sup></li> <li>• May have preservatives that can irritate the skin</li> </ul>
Cream	<ul style="list-style-type: none"> <li>• Easy to apply</li> <li>• Provides more support for hydration</li> </ul>	<ul style="list-style-type: none"> <li>• May have preservatives that can irritate the skin</li> </ul>
Ointment	<ul style="list-style-type: none"> <li>• Less preservatives</li> <li>• Provides greatest skin barrier support</li> </ul>	<ul style="list-style-type: none"> <li>• More difficult to apply and may feel greasy</li> </ul>

The selection of the right moisturizer depends on the individual. For those with very dry skin, an ointment or cream would be preferable to a moisturizer. For those that do not like the thicker feel of an ointment, a cream might be preferred.

## Function

Moisturizers work in several different ways, and knowing how they function can help you make the best choice. Two important concepts when it comes to understanding how moisturizers work are the transepidermal water loss (TEWL) and the hydration.

- Transepidermal water loss is a measure of how quickly water is lost through the skin. Everyone naturally loses water through the skin.
- Skin hydration is a measure of how much water is trapped in the skin.

In dry skin and in eczema, the transepidermal water loss is increased and the skin hydration is decreased when compared to normal skin.

Moisturizers help to counteract these imbalances and can work in the following ways:

- Occlusion: Ingredients known as occlusive agents within moisturizers can help create a healthier barrier so that the skin is better able to block the water from leaving through the skin. This can indirectly increase the hydration of the skin. Examples: petrolatum, shea butter
- Directly increase hydration: Ingredients known as humectants within moisturizers can attract water molecules and hold them into the skin. This directly increases the skin's hydration. Example: glycerin

Moisturizers should be selected so that there is a balance of occlusion and hydration.

**Table 3. Examples of Occlusive and Humectant Properties of Ingredients**

Formulation	Occlusive Action	Humectant Action	Considerations for Use
Petrolatum/White Petrolatum	+++	+	Can clog pores on the face
Shea Butter	+++	+	Can clog pores on the face
Silicone	+++		
Lanolin	++	+	May cause skin allergy
Mineral Oil	++	+	
Glycerin	+	+++	
Urea	+	+++	May burn on sensitive skin or open cracks
Propylene Glycol	++	++	May cause skin allergy

## Frequency

The skin in those with dry skin or eczema requires daily maintenance. Here are a few tips for making the most out of a moisturizer, no matter which one is selected:

- Moisturizers should be applied after bathing, as they help to maintain skin hydration.<sup>3</sup>
  - The frequency of bathing does not seem to affect the skin in eczema,<sup>4,5</sup> although longer bath times may affect eczema. What is important is that moisturizers are applied after bathing.<sup>3</sup>
  - Moisturizers should be applied daily, even on days in which no bathing occurs, as moisturizers can still significantly increase the skin's hydration.<sup>3</sup>
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## Final Tips

Selection of the right moisturizer is based on many factors. Here are some general tips to help with choosing a moisturizer:

- For dry skin or skin afflicted with eczema, it is best to use a moisturizer that has ingredients that can serve as both occlusive agents and as humectants.
- Essential oils can be a source of skin allergy. Not all essential oils will cause an allergy. But if a moisturizer is causing skin irritation and contains essential oils, it may be better to switch to one without an essential oil.
- Fixed oils, unlike essential oils, are less likely than essential oils to cause an allergy. Fixed oils can help create a smoother application and leave the skin feeling smoother as well. Examples include grapeseed oil, almond oil, or sunflower oil. Studies have shown that olive oil may make eczema worse.<sup>6</sup>
- Fragrances should be avoided as they can cause skin allergies. Look for ingredients like “fragrance” or “parfum” as examples. Products labeled as “unscented” can still contain fragrance.

Finally, the right moisturizer is going to be a personal choice and the spreadability, stickiness, and feel will be different from person to person. Combining what feels good with the science behind finding a good moisturizer will hopefully lead to daily use of the “right” moisturizer.



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**Dr. Lawrence Eichenfield** is chief of pediatric and adolescent dermatology at Rady Children's Hospital-San Diego, as well as vice chair of the Department of Dermatology and a professor of dermatology and pediatrics at UC San Diego School of Medicine. Dr. Eichenfield earned his medical degree from Mount Sinai School of Medicine in New York, was a pediatric resident and chief resident at Children's Hospital of Philadelphia, and completed dermatology training at the hospital of the University of Pennsylvania. He is board certified in pediatrics, dermatology and pediatric dermatology. Dr. Eichenfield's clinical interests include atopic dermatitis, acne, psoriasis, vascular lesions including port wine stains and hemangiomas, neonatal dermatology, laser surgery, nevi and skin signs of systemic disease. He has authored more than 300 journal articles, chapters, abstracts and books on these topics and serves on the editorial boards of multiple journals and periodicals. He has been named one of the "Best Doctors in America" since 1994.

# 11

## Chapter 11 Early Moisturizer Use in Children

Christopher Teng, MD and Marissa Perman, MD

### Key Takeaways

- A poorly functioning skin barrier is important in the development of eczema.
- Early consistent moisturizer use in high-risk infants may reduce the development of eczema.
- Infants still need to be seen by their doctor during flares.



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### Introduction

Eczema carries a significant cost to patients and society, both in quality of life and cost of treatment.<sup>1</sup> As such, there has long been interest in preventing eczema and its related disorders, which include food allergies, asthma, and allergic rhinitis. Recent studies have investigated whether early, frequent use of moisturizers in high-risk newborns can prevent the development of eczema with promising results.<sup>2,3</sup> Though further studies are needed to confirm these findings, there is hope that early moisturization may be a cost-effective and safe way to help prevent eczema.

### Background

Skin barrier defects are believed to be critical to the development of eczema. Skin normally helps keep natural moisture in and environmental germs out. In people with eczema, the skin barrier does not work as well, in part due to changes in the proteins and lipids that make up the barrier.<sup>4</sup> These changes cause the skin to dry out more easily and allow outside particles to penetrate the skin more. When the immune cells that naturally live in the skin are exposed to these particles, they can become activated and cause inflammation in the skin, leading to eczema. The entry of these potential allergens through the skin is also thought to contribute to the development of other allergic disorders like food allergy.<sup>2,3,5</sup>

With this in mind, researchers are interested in trying to prevent eczema by supplementing the skin barrier of high-risk infants with early moisturization. In theory, increasing the barrier function of the skin will better retain moisture and reduce skin penetration of allergenic particles, preventing the immune cells from becoming sensitized and activated. Preventing immune activation may also reduce the risk of developing other allergic diseases.

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## The Evidence

Two recent clinical trials have studied whether regular moisturizer use could prevent eczema in high-risk infants.<sup>2,3</sup> High risk was defined as having an immediate family member with eczema or one of its related conditions (asthma or allergic rhinitis). Both trials randomly assigned half of the newborns to receive daily full-body moisturization. One trial ran for six months and found that infants who received daily moisturizer were 50% less likely to develop eczema than those whose parents were asked not to use moisturizers.<sup>2</sup> The parents were given 3 types of moisturizers from which to choose.

The other trial ran for eight months and studied a common moisturizer in Japan.<sup>3</sup> Infants who received daily moisturizer were compared to infants who received petroleum jelly only when thought to be necessary by parents, which ended up being a very small amount. This trial also observed a significantly lower risk of eczema with treatment: 32% fewer infants in the treatment group developed eczema during the study period. Though the researchers hoped that treatment would reduce immune sensitivity to allergens, no significant difference in sensitivity testing was observed between the two patient groups.

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## Discussion

Both trials demonstrate promising evidence that early consistent moisturizer use in high-risk infants may reduce the development of eczema. However, several questions still remain. First, they studied relatively small numbers of patients, so it is unclear how reliable and generalizable the results are until larger studies are done that confirm the results. Larger studies may also be better able to detect a beneficial effect on allergen sensitivity, if one exists. Second, the trials were relatively short in duration, and it is unknown whether eczema is truly being prevented or simply delayed. Longer-term studies will clarify whether the benefits of early moisturization persist, and whether later development of other allergic conditions is also reduced. Third, the efficacy of specific moisturizers has not been adequately studied, and it is unknown which type of moisturizer is best for risk reduction.

Practically, even if a treatment is beneficial, it is important to determine whether that benefit is worth the risks and cost of treatment. Overall, moisturizers have low risk to patients, although some children may develop skin allergies to the ingredients in certain moisturizers.<sup>6</sup> Rather, the main cost of moisturizer is financial, varying significantly by type and brand. Research suggests that using moisturizers to prevent eczema is cost effective regardless of the moisturizer used, which may have a significant impact on both individual families and the healthcare system.<sup>7</sup>

Overall, there is hope that early moisturizer use can prevent eczema in children. A large-scale study is under development.<sup>8</sup> In the meantime, parents may consider regular use of allergen-free moisturizers starting from birth as a low-risk option to possibly reduce the risk of eczema. Still, it is possible for infants to develop eczema even if well-moisturized, and moisturizer use should not prevent parents from seeking medical evaluation and care for a new rash.

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**Dr. Marissa J. Perman** grew up in Baltimore, Maryland and attended Cornell University in Ithaca, New York for her undergraduate studies. She then completed her medical degree at the University of Maryland School of Medicine followed by pediatric residency at Cincinnati Children's Hospital Medical Center. She then completed a dermatology residency at the University of Cincinnati. After 6 years in Cincinnati, she moved to Philadelphia, PA for pediatric dermatology fellowship at the Children's Hospital of Philadelphia. Dr. Perman is currently an Associate Professor of Pediatrics and Dermatology at the Children's Hospital of Philadelphia and the University of Pennsylvania. She is a fellow of the American Academy of Dermatology and the American Academy of Pediatrics. Her current interests include infantile hemangiomas, epidermolysis bullosa, polycystic ovarian syndrome, and sunscreen safety and efficacy. She enjoys playing lacrosse and spending time with her family.



# 12

## Chapter 12 Using Natural Oils for Eczema Jason Derico, ND



### Key Takeaways:

- Natural oils may have a role for topical application for eczema.
- All natural oils are not the same and some have better evidence than others.
- Essential oils are different from fixed oils, have higher potential for allergy and irritation, and should be used carefully.

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Because eczema can be difficult to manage, patients are often searching for new methods to control the irritating symptoms. Questions often arise within the patient population about what oils are safe and effective for managing the condition. This can be very difficult because each patient may respond differently to each oil, and although oils can be helpful, they can also be problematic.<sup>1</sup>

### Intake and Supplementation with Oils

The supplemental oral intake of polyunsaturated fatty acids seems to have no preventive effect on the frequency of symptoms, but the intake appears to reduce the severity if the eczema is allergy related.<sup>2</sup> An evidence-based review of randomized trials listed evening primrose oil, taken internally, as one of the complementary and alternative medicine treatments that has at least some evidence supporting its beneficial effects for those with eczema.<sup>3</sup>

## Topical Application and Moisturizers

Moisturizers are often considered a basic requirement for the optimal treatment of eczema.<sup>4</sup> Many natural oils are being used as moisturizers. A look at the effects of applying olive oil or sunflower oil to the skin of newborn children from families with a history of developing eczema shows that both of the oil groups were found to have improved hydration of the skin but had significantly less improvement in part of the structure of cell membranes.<sup>5</sup> Therefore, oils need to be applied carefully and stopped if there appears to be worsening of the eczema. The research around natural oils is summarized below:

**Table 1. Use of Natural Oils for Atopic Dermatitis\***

Natural Oil	Evidence
Coconut Oil	Cold-pressed oil may improve eczema and has antibacterial properties.
Jojoba Oil	Has occlusive properties to maintain skin hydration. However, petrolatum was shown to have better occlusive properties.
Olive Oil	Cold-pressed oil may worsen function of skin barrier and should not be used for eczema.
Safflower Oil	Cold pressed oil has no clinical studies and may increase lipids in the bloodstream. It is also rich in linoleic acid.
Sunflower Seed Oil	Cold-pressed oil is superior to olive oil and contains skin barrier restoring effects. It can reduce the use of steroids and is rich in linoleic acid.

\*Information adapted from information in Vaughn AR et al.<sup>6</sup>

Baby oil is a mineral oil that is often produced as a byproduct of refining crude oil. A small study showed that fragrance-free baby oil may work as an effective soap substitute or bath additive for those with eczema.<sup>7</sup>

## Essential Oils

Essential oils are concentrated forms of plants that are typically obtained through various forms of extraction, including distillation. Given that these oils are highly concentrated, it is important to understand that they have potential to cause problems when taken internally or when they are applied topically. Very little high-quality research has been done on the effects of essential oils for eczema, so all patients with the condition should first ensure they are using an appropriate oil under the direction of a trained professional. If applying essential oils topically, they should always first be tested on a small patch of skin to determine if they will cause a reaction.

Black cumin (*Nigella sativa*) essential oil has been used traditionally for many different health conditions, including eczema, and although the oil hasn't been properly evaluated for its benefits to people with eczema, one study found that the essential oil can reduce pain sensation and also has anti-inflammatory effects,<sup>8</sup> which could possibly provide a little symptomatic relief for patients with eczema.

There are many other oils that are used in aromatherapy, applied topically, or taken internally for a variety of reasons. Caution should always be taken when using oils in any way, as many are helpful, but also many can be harmful if used improperly. Research is continually improving to determine optimal treatment methods and new breakthroughs continue to be found. Until there is an expert consensus, each oil should be used cautiously. Patients should also be monitored by professionals for possible adverse effects.

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# 13

## Chapter 13 Myths and Truths About Steroids

Melody Maarouf, MHS, Raja Sivamani, MD, MS, AP,  
and Vivian Shi, MD

### Key Takeaways:

- Topical steroids are effective in eczema.
- Steroids come in different strengths, and stronger steroids should be used to get a flare under control quickly and then tapered to weaker dosages.
- Steroids should be used for control of flares, and moisturizers along with lifestyle changes can be used to minimize topical steroid use.

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Topical corticosteroids are an effective treatment approach in the management of eczema. Multiple research studies have shown that topical steroids are both good for controlling an outbreak of eczema as well as preventing future outbreaks of eczema.

However, many parents are concerned with the risks of using steroids, especially when it comes to children.<sup>1-3</sup> Estimates of “steroid phobia” have ranged widely, with some studies showing that anywhere from 21% up to 83% of people have a fear of steroids.<sup>3</sup> More importantly, these concerns can lead to situations where patients may intentionally decrease the use of steroids or even skip the steroids altogether even after they are prescribed.<sup>3</sup>

Herein we take a closer look at some of the myths and truths about steroids when they are used in the treatment of eczema.





### **Myth: All Topical Steroids Are the Same**

While all steroids work by decreasing skin inflammation, there are many different kinds of topical steroids, and they are not all created equally. Topical steroids are categorized based on their strength into different classes, with Class I as the strongest and Class VII as the weakest. Many patients may have a unique eczema action plan designed by their clinician, and thus, there is no standardized steroid dosage schedule. To combat eczema flares, some clinicians use a short course of high-potency steroids followed by a taper to lower potency steroids or nonsteroidal anti-inflammatory medications, while other clinicians opt for initiating treatment with low potency options, and only increase potency incrementally as needed. Though there are several options, clobetasol 0.05% propionate ointment is a potent Class I steroid, and is typically used on areas with thicker skin, such as the palms, soles, elbows, knees, and scalp, while hydrocortisone 0.25-1% cream is a much weaker Class VII steroid, and is used for mild eczema or flares on areas with thinner skin, such as the face, armpits, and groin folds.<sup>4</sup> Choosing the right potency of topical steroids on the appropriate location and disease severity is paramount in limiting side effects.

### **Myth: You Can Become Addicted to Steroids**

Topical steroid addiction or withdrawal are commonly thought of as eczema worsening (or rebound flare) after stopping topical steroid use, to a severity that is worse than before starting steroids. Signs and symptoms include common manifestations of an eczema flare, such as increased skin redness, swelling, scaling, thickening, itching, stinging, and burning. Therefore, it can be difficult to distinguish a regular eczema flare from a potential steroid withdrawal. While steroid addiction is possible, it is important to note that occurrence is uncommon, and typically only occurs with improper and prolonged (12 months or more) use of moderate to high potency topical steroids. This is reportedly more common on the facial skin of women who tend to blush more easily. Research data in children is limited, and thus, definitive conclusion cannot be made.<sup>5</sup>

### **Truth: Topical Steroids Can Have Side Effects with Long Term Use**

The biggest concern for prolonged or improper topical steroid use is skin thinning or atrophy, bruising, small blood vessels (telangiectasia), stretch marks (striae), increased hair growth, and acne-like eruptions. Children and elderly patients have intrinsically thinner skin, and therefore are more likely to experience these side effects. These signs usually diminish after topical steroids are stopped.<sup>4</sup> As there is no one-size-fits-all eczema treatment plan, topical steroids should be used carefully under the guidance of an experienced clinician. Typically, daily topical steroid of the appropriate potency can be used continuously for 2-4 weeks followed by a 1-week break. If the flare has not subsided, topical steroids can be used for longer periods or be exchanged for a stronger potency topical steroid.<sup>6</sup>

### **Truth: Topical Steroids Are the Most Powerful Agent at Getting Inflammation Under Control**

Topical steroids are the mainstay anti-inflammatory treatments for eczema patients. They act on a variety of immune cells to rapidly reduce inflammation associated with eczema. Topical use on active eczema skin can also prevent and treat skin infections by decreasing *Staphylococcus aureus* load,<sup>4</sup> a bacterium on the skin that is known to exacerbate eczema. When compared with topical calcineurin inhibitors (tacrolimus and pimecrolimus), the leading non-steroidal anti-inflammatory alternatives, topical steroids such as clobetasol, fluticasone propionate, and betamethasone are significantly better at reducing levels of inflammatory cells and mediators in patients with mild-moderate eczema.<sup>7-9</sup>

### **Myth (Except In Applying All Over the Body): Topical Steroids Can Suppress the Immune System and the Adrenal Glands**

While a very small amount of topical steroid may be absorbed and detected in the blood stream, the risk of substantial immunosuppression and adrenal gland suppression is low. The risk of topical steroid absorption is higher when applied all over the body, and in very young infants whose skin barrier is still immature. There may be an increased risk in individuals who concurrently use other forms of corticosteroids by mouth or an inhaler,<sup>10</sup> which is an important consideration in eczema patients, as many also suffer from asthma. Since the risk of immunosuppression and adrenal suppression is so low with proper use of topical steroids, systemic side effect monitoring for eczema patients who use topical steroids is not recommended.<sup>4</sup>



### **Truth: Holistic Care Should Include the Use of Steroids**

A successful eczema treatment goes beyond using topical steroids. Eczema prevention is just as important as eczema treatment, and can be done through diligent, frequent skin moisturization and intermittent wet wraps, proper bathing techniques, improving sleep, avoiding environmental triggers, and practicing relaxation and stress-reduction techniques for the patient and caregivers. Implementation of these proactive approaches will in turn decrease the need for reactive treatments using topical steroids.<sup>4</sup>

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# 14

## Chapter 14 Traditional Chinese Medicine Herbs for Eczema

Mazin Al-Khafaji, LAc, FRCHM, MATCM



### Key Takeaways:

- Chinese medicine believes that the body has a natural state of balance and that imbalances lead to diseases.
- Chinese medicine seeks to identify imbalances and restore balance.
- The general diagnosis of eczema may be represented by many different types of imbalances that can be identified with Chinese medicine.

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Chinese medicine, one of the oldest systems of medicine still in use today, has its roots in prehistory and embodies the accumulated knowledge and wisdom of countless individuals in many fields of medicine.

Understanding, classifying, and treating diseases of the skin has been no exception in this regard. In fact, dermatology is one of the very first specialties described in the ancient classical works of Chinese medicine over 2,000 years ago.<sup>1</sup>

One of the enduring hallmarks of Chinese medicine, in marked contrast to most traditional systems of medicine, is that during the course of its development, case studies and in-depth descriptions and treatises on efficacious medicinal herbs and applicable formulae have been systematically recorded, commented upon, and crucially passed down to future generations in what are termed classical texts. In this way, herbal formulas have been developed and tested repeatedly over thousands of years, so that a deep, practical, and insightful understanding of their actions and indications has been accumulated and treasured. Over time, this has led to a profoundly rational and complete holistic system of healthcare that is Chinese medicine today; very much in use on a daily basis in China and around the world.

Chinese medicine starts with the premise that a healthy organism as a whole is in a balanced state of equilibrium (as in the balance of Yin and Yang, representing a perfect whole); whereas, disease represents a disturbance of this equilibrium, leading to illness. One of the key goals of Chinese medicine is to recognize and treat this imbalance, taking into account the complete person and their distinctive circumstances, thus understanding the symptoms and signs of the disease within context of the whole individual. In this way, Chinese medicine addresses the root cause of the disease and aims at re-establishing a stable, enduring, and well-adjusted state of health.

The most powerful way this can be achieved is through the use of Chinese herbal decoctions, which are combinations of skillfully prescribed herbs that are cooked in water and taken daily by the patient. The formula composition varies for each individual patient and is adjusted at every visit to the herbalist, mirroring the changes that occur in the condition throughout the treatment process. For skin diseases, in addition, externally applied herbal creams, washes, powders, and ointments, tailor-made specifically from natural ingredients for particular conditions, can be used to bring about spectacular change and rapid relief to inflammation and itching.

When it comes to eczema, Chinese medicine, when properly applied, offers a powerful method for rapidly reducing inflammation, easing itch, and alleviating general discomfort, leading the patient back on the path to health; thus, in many cases reducing and eliminating dependence on pharmaceutical medications.<sup>2-6</sup>



In order to identify the root cause of the ailment, the Chinese medicine doctor questions the patient about the workings of all systems in the body, such as digestion, sleep, emotional state etc., and in the case of a skin disorder, closely observes the skin and the way the particular condition manifests.

During this process, the doctor will first make a diagnosis of the disease itself (for example eczema, psoriasis, lichen planus, etc.). Once that is done, a further diagnosis of a pattern type for that particular condition is made.

For example, three different patients with the diagnosis of atopic eczema may be diagnosed with a different pattern type based on the way the eczema manifests and expresses itself in that particular patient. As a consequence, all three would receive a different combination of herbs, even though the Western diagnosis of atopic eczema would be the same among them.



### Pattern Types

Here is further explanation of this all-important concept of pattern types more clearly with a few examples. According to Chinese medicine, eczema may arise from a variety of root causes and manifest itself in a number of different patterns that will be described precisely by the herbalist with terms such as heat, damp, toxin, and wind (among others).

What does this mean? In ancient times, doctors used images and metaphors borrowed from nature to understand and describe disease and the way it manifested.

#### To a Chinese Doctor:

- Red, inflamed skin represents heat or fire (the word inflammation incidentally comes from the Latin word *inflammare* – on fire).
- Skin that is swollen, blistering, crusty, and oozing liquid is represented by dampness; skin that is scaly and itchy is symbolized by wind.
- Skin that is infected with pustules or purulent discharge denotes the presence of toxin.
- Skin that is dry and fissured with little or no inflammation (typically seen in resolving eczema), is represented by what is termed dry yin and blood, and so on.

Along the same lines, all herbal ingredients are classified and categorized according to their nature, both by taste (acrid, bitter, sweet, salty, bland, and sour) and by their inherent temperature (hot, warm, neutral, cool, and cold), as well as their specific actions and indications.

There is a sophisticated understanding of how different tastes correspond to different actions that the herbs have on the body that is beyond the scope of this short chapter. What we can say is that the taste of a specific herb coupled with its intrinsic nature and temperature represents the ultimate effect that herb has on the body. To the uninitiated, these terms may seem simplistic and naïve; however, it is important to understand that this classification is not arbitrary or haphazard but has evolved over thousands of years from close and meticulous observations, and represent real, practical, and detailed clinical realities.

So, for example, herbs that are designated bitter and cold have the action of drying dampness and cooling heat, and so will be appropriate for skin lesions that are inflamed, swollen with blisters, and exudate (classified as damp-heat).

Herbs that have been classified as acrid and cold, on the other hand, will have the action of cooling heat and dispelling wind, and therefore will be appropriate for inflamed, red, itchy skin that is dry and scaly (classified as hot blood with wind), and so on.

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This simple outline cannot be considered adequate without at least mention of the crucial component that is the combining of herbs into an herbal formula. A typical herbal formula is composed of 10-15 separate ingredients, such as dried roots, leaves, stems, seeds, etc. It was discovered many thousands of years ago that different ingredients, once combined and cooked together, have actions far greater than any single one of the individual herbs within that formula. Which is another way of saying “the whole is greater than the sum of its parts.” As such, combinations of herbs act as “force multipliers,” having a more profound overall action on the body than a simple remedy composed of a single ingredient could have.

This seemingly simple method of combining herbs not only brings the synergy between active ingredients into play but enhances the overall effect of any prescription many fold, and any potential side effects can also be significantly reduced or totally eliminated.

The above is necessarily a brief and simplified understanding of a complex and sophisticated medical system. These aspects of heat, damp, toxic-heat, and so forth may manifest differently at various layers within the body, which would require a different combination and application of herbs to resolve.





Another very important concept in Chinese medicine is “treating the root problem and not focusing only on its manifestation (symptoms and signs).” Through application of this principle, long-term resolution of chronic disease is a life changing reality for many patients with chronic eczema. When body systems are brought back into a state of equilibrium, it is much easier for the person to maintain that state of health.

With this remarkable clinical history and tradition, many are now exploring how Chinese medicine works from the perspective of modern medicine. We do not know everything, but we have some very insightful hypotheses.

One hypothesis is that many herbs that in Chinese medicine are assigned the action of resolving toxic heat, in fact help to control the colonization of *Staphylococcus aureus*, a bacterium closely involved with eczema flares.<sup>7,11</sup> Additionally, Chinese herbal formulas may help encourage a healthy microbiome in patients with eczema, and this may in turn contribute to the long-term improvements in the condition.<sup>12</sup> Furthermore, clinical studies have demonstrated that Chinese herbs have been shown to reduce allergic mechanisms that are involved in eczema.<sup>8,9</sup> Interestingly, Chinese herbs have also been shown to desensitize individuals to allergies and sensitivities, which may be involved in stimulating the eczema flare.<sup>10</sup>

*Chinese medicine has a very significant role to play in treating a huge range of such conditions, particularly chronic disorders such as atopic eczema that prove so difficult to manage satisfactorily.*



## Research Studies

Amongst the very first clinical trials on treating atopic eczema in the West was one performed at the Great Ormond Street Hospital for Sick Children and The Royal Free Hospital, both in London, UK in the late 1980's and early 1990's. These double-blind, cross over trials showed unambiguous and exceptional responses in severe cases of atopic eczema by using Chinese herbs,<sup>5,6</sup> and not only in the short term. A subsequent follow up of severely affected children and adults showed that a significant number of patients still benefited with more stable skin one year later. In the adult trial, 12 of the 17 patients showed 90% reduction, and the remaining five had greater than 60% reduction in clinical scores



compared with baseline values; whilst in the children's trial 18 had at least 90% reductions in eczema activity scores, whilst five showed lesser degrees of improvement.<sup>12,13</sup>

Since then many other clinical trials have explored possible mechanisms of action on atopy and allergic disease<sup>2,9,10</sup> as well as the efficacy of Chinese herbs.<sup>10,14</sup> For example, in one study in what is considered the gold standard in intervention based studies, a randomized, double blind, placebo controlled study, 85 children with atopic eczema<sup>15</sup> underwent treatment with Chinese herbs; the authors concluded that "Traditional Chinese herbal medicine concoction is efficacious in improving quality of life and reducing topical corticosteroid use in children with moderate-to-severe Atopic Dermatitis. The formulation was palatable and well tolerated."

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There is no question that this ancient system of medicine has a significant and substantial part to play in managing this increasingly common and debilitating disease, not only by controlling acute episodes of inflammation without the need to resort to steroid use, but by restoring normal function of the skin so that long term stability and health is achieved and maintained.

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**Mazin Al-Khafaji** is recognized as one of the leading experts in the field of skin care and Chinese medicine, and over the past two decades has taught hundreds of students worldwide.

Mazin started his studies in Chinese medicine and the Chinese language in 1979. He graduated as an acupuncturist in the UK in 1983 and then continued his studies in China where he was awarded the first Sino-British scholarship to study medicine alongside Chinese students. He graduated from the College of Traditional Chinese Medicine in Shanghai in 1987 as Doctor of Chinese Medicine.

Since his return from China in 1987, he has taught Chinese medicine to a new generation of herbal practitioners worldwide, and he is respected as one of the most inspirational teachers and clinicians of his time.

# 15

## Chapter 15 The Ayurvedic Approach to Eczema

Marc Halpern, DC, CAS, PKS

### Key Takeaways:

- Ayurveda is a form of medicine that originated from India and has a holistic view of the body and skin.
- Ayurveda seeks to understand imbalances in the three doshas (vata, pitta, kapha) and restore balance.
- Ayurveda looks at food and mindfulness, along with topical therapies, as an essential part of eczema treatment.



In Ayurvedic medicine, the health of the skin is a reflection of the overall physical and emotional health and well-being of the individual. As a result, practitioners take into consideration treatments that correct the stresses of the mind as well as those that nurture and heal the skin. Ayurveda also understands that no one has full control over the mind. Each person has tendencies that they come into this world with. Some tend toward anxiety or depression, others toward being critical or angry, and others toward melancholy. These tendencies appear to have a genetic basis.<sup>1</sup> Ayurveda considers these tendencies to be a part of a person's "consciousness." Hence, Ayurveda introduces specific practices to heal the consciousness of an individual. As consciousness heals, the mind becomes more peaceful, emotions become less dramatic, and the health of the skin improves.

According to Ayurvedic texts, eczema is a disease affecting the superficial and intermediate layers of skin. These layers of the skin take on qualities that the Ayurvedic practitioner assesses. These layers may become warm or cold, dry or moist, rough (scaly) or smooth, and so on. Based on the assessment, the opposite qualities are applied to the skin in order to neutralize the qualities that are in excess. As an example, oil may be applied to dry skin. Drying herbal powders may be applied to oily skin.

Ayurveda does recognize that eczema is a challenging condition to treat. It is classified among the “Kushta” or obstinate skin disorders.<sup>2</sup> Eczema, like many skin disorders, is caused, in part, by poor digestion. Poor digestion occurs as a result of taking in the wrong foods, combining foods improperly, or because a person cannot completely digest the foods that they do take in. Poor digestion is considered the root of food allergies, (atopy) a factor in cases of eczema. For this reason, an Ayurvedic practitioner will focus much of their attention on helping the patient with eczema to normalize digestion through making dietary changes.

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Similar to conventional dermatology, eczema is not just one disease in Ayurveda. Rather, it presents differently in different patients. In Ayurveda, the nature of the presentation depends upon the dosha that is disturbed. Doshas are groupings of qualities that can serve a physiological purpose. There are a total of three doshas: vata, pitta, and kapha. For instance, when the vata dosha is disturbed, eczema is dry and rough. When the pitta dosha is disturbed, eczema is red and inflamed. When the kapha dosha is disturbed, eczema is oily (seborrheic) or pustular. In the case when eczema is referred to as atopic dermatitis, it is both the vata and pitta doshas that are in imbalance more than the kapha dosha unless there is worry for a secondary infection with the pustules. Frequently, more than one dosha may be disturbed at the same time. As a result, each person’s presentation may be a little different. The approach to treatment can be broadly summarized as follows.

1. *Normalize diet and digestion.* This includes identifying food allergies and avoiding foods that trigger the condition. These foods may be different for different individuals.
2. *Purify the body.* In Ayurvedic theory, purification seeks to rid the body of toxins that accumulate in the body as a result of poor digestion as well as due to environmental exposure. These toxins cause irritation as they circulate and become deposited in the skin. Purification occurs through the use of herbal supplements as well as a limited diet. Food and dietary restriction should only be performed under medical guidance and can lead to nutritional deficiencies if done improperly.

A specialized procedure called “Panchakarma” may be employed to enhance cleansing. Panchakarma utilizes enemas and purgatives to cleanse the bowels. An example of an herb that purifies the skin is neem (*Azadirachta indica*).



3. *Following purification*, the skin is rejuvenated using a different set of herbs and by following an improved diet. An example of an herb that rejuvenates the skin is guduchi (*Tinospora cordifolia*).
  4. *Topical pastes may be applied to the lesions*. Your practitioner will provide a mixture of herbs in powder form. These herbs are then combined with a liquid medium in accordance with the qualities of the lesion. The most common liquid medium used for dry lesions is neem oil. Simple water or rose water may be used for oily lesions.
  5. *Meditation and yoga* are utilized to treat the mind-consciousness connection and help to relieve stress.
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# 16

## Chapter 16 Herbal Approaches To Eczema Michael Traub, ND



### Key Takeaways:

- Topical herbs have anti-inflammatory properties that can be incorporated into a regimen for treatment of eczema.
- Clinical testing is essential when evaluating the role of herbs.
- Single and multiple herbs have been tested clinically to show early promise for topical herbal therapies.

Many herbs have been recommended for the treatment of eczema but those that have been the subject of well-designed clinical trials are fairly limited. The effectiveness of herbal therapies has been observed in terms of improvements in several measurements of eczema such as the Scoring Atopic Dermatitis (SCORAD) index, Children's Dermatology Life Quality Index (CDLQI), Dermatology Life Quality Index (DLQI), improvements in inflammation, itching, trans-epidermal water loss (TEWL), and expression of inflammatory mediators.

### Topical Herbs

#### *Chamomile*

Dried and fresh flowers of the chamomile plant have been used medicinally around the world for many years. Laboratory studies have shown chamomile extracts inhibit inflammatory mediators and can also inhibit histamine release. Topical creams that contain mild chamomile extract as the active ingredient have demonstrated no chamomile related allergen potential in a study in which it was used in patients with moderately severe eczema (cases of allergic contact dermatitis from chamomile has been reported).<sup>1</sup> After a 2-week course of treatment, a mild superiority with chamomile containing cream was demonstrated when compared to topical hydrocortisone 0.5% and no significant difference was found when compared to placebo.<sup>2</sup>



### *St John's Wort*

St John's wort is an herbal medicine widely known for its effectiveness in the treatment of depression. It also has a long history of topical use as an antibacterial medication. A small study of 21 patients with mild to moderate eczema showed that twice daily application of St John's wort cream for one month was significantly superior to placebo based on SCORAD assessments. There was no significant difference between the two groups in skin colonization by *Staphylococcus aureus*.<sup>3</sup>



### *Coconut Oil*

A study published in 2014 reported that the topical application of coconut oil for 8 weeks was significantly superior to mineral oil in 117 patients with mild to moderate eczema, based on SCORAD and TEWL assessments.<sup>4</sup>

### *Quercetin*

Quercetin is one of the most abundant flavonoid compounds commonly found in fruits and vegetables. Taken orally, it has shown promise in reducing inflammation and allergic symptoms and is considered a natural antihistamine.

A preliminary small trial of topical quercetin cream (in an enhanced delivery formulation) in 30 healthy volunteers showed that it significantly protected against damage induced by ultraviolet radiation, histamine and contact with toxic chemicals, reducing redness, itching and inflammation. It may also help to restore skin barrier function, increase hydration, and reduce water loss.<sup>5</sup>





### ***“Balloon Plant” - *Cardiospermum halicacabum****

A cream that contains 10% *Cardiospermum halicacabum* is available for the topical treatment of eczema. *Cardiospermum halicacabum* is commonly known as the “love in a puff” or “balloon plant.” It is a climbing plant that is commonly found in tropical and subtropical Asia and Africa. It has a modest effect and in my experience is not typically effective for eczema except for mild cases.<sup>6</sup>

### ***Oregon Grape (*Mahonia aquifolium*)***

A topical preparation of Oregon grape (*Mahonia aquifolium*) is available as a topical formulation. Although typically used for psoriasis, it has also shown efficacy in a small trial for eczema. In 42 patients with eczema treated for 12 weeks, efficacy and safety was assessed using Eczema Area and Severity Index scores and a Subject Reported Evaluation of Treatment. Compared to baseline, significant improvements were seen in ratings of effectiveness, itching, and appearance as a result of using the Oregon grape preparation.<sup>7</sup>



The active compound in Oregon grape is berberine. Berberine has been demonstrated to inhibit the production of thymic lymphopoietin (TSLP) by mast cells that play a pivotal role in eczema.<sup>8</sup> Thus there may be an additional benefit to applying berberine topically, and this deserves further study.

A prescription topical medication for eczema that contains derivatives of the following herbal substances: Shea Butter, Chamomile, Licorice Root, Aloe Vera, Grape Seed, and Vitamins C and E. A study published in 2008 evaluated its use for mild-to-moderate atopic dermatitis in 142 infants and children. The primary measure in this study was Investigator Global Assessment (IGA) of atopic dermatitis at Day 22. This cream was significantly more effective than vehicle cream for the primary and secondary measurements and proved to be safe and well tolerated as had been previously demonstrated in a study of adults with eczema, although mild to moderate stinging and burning sensations were reported.<sup>9</sup>

### ***Colloidal Oatmeal.***

Colloidal oatmeal has several constituents that have been shown to be beneficial in eczema. Starches and beta glucans have protective and water holding functions. Polyphenols (avenanthramides) are antioxidants and anti-inflammatory. Saponins have a cleansing activity. Oatmeal containing topical products has shown efficacy in clinical trials in improving disease severity and itching in eczema patients.<sup>10,11</sup>



### ***Herbal Extract Based Moisturizer***

A topical herbal preparation consisting of botanical extracts of Rhubarb, Skullcap, Cnidium monnieri, and Dipotassium Glycyrrhizinate (Licorice root) with ceramides (which help to maintain the water content of the skin) has been shown to have efficacy.<sup>12</sup> The product showed improvements in SCORAD assessments in a clinical trial of 20 subjects treated twice daily 3 weeks, even in patients with moderate to severe eczema. TEWL and hydration also significantly increased. None of the patients required additional medication or rescue therapy, and no secondary infections or side effects were reported.<sup>12</sup> Additionally, Ailanthus altissima bark extract and Sanguisorba officinalis root extract have been added to formulations to bring additional antimicrobial effects to the formula to help prevent and treat secondary infection.<sup>13</sup> The enhanced product will soon be subjected to a clinical trial.

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# 17

## Chapter 17 Acupuncture and Acupressure for Eczema Joseph Alban, LAc



### Key Takeaways:

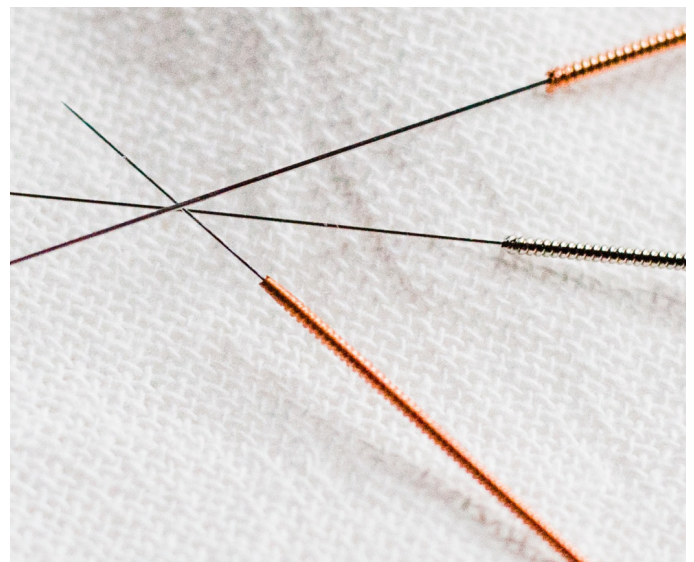
- Acupuncture developed over thousands of years ago as a part of Traditional Chinese Medicine.
- Acupuncture addresses both the physical and psychological symptoms of eczema, such as itch and depression.
- There are few side effects when acupuncture is performed by a properly trained practitioner.

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### Acupuncture for Eczema

Eczema is a challenging and complex condition which not only causes significant discomfort but can also disrupt your life. The symptoms themselves, such as itch, is not only uncomfortable, but also causes further inflammation, as well as disrupts sleep. Children and adults live in a cycle of worsening symptoms which cause a flare in the condition, and then the flare also causes worsening symptoms. The instability of eczema often leads individuals to live restricted lives, avoiding enjoyable events and social situations. Mind-body treatments, such as acupuncture, can help to break the cycle of the symptoms and inflammation, which is an important step for healing.

Acupuncture is a holistic therapy that is able to address both physical and psychological symptoms in eczema such as itch, inflammation, and allergic response, as well as depression and anxiety.<sup>1-4</sup> Acupuncture developed over 2,500 years ago in China as a part of Traditional Chinese medicine (TCM). This long clinical history has provided generations of experience in the treatment of many skin conditions.



## **What Is Acupuncture Like?**

Acupuncture is a therapy that uses very thin needles to stimulate areas on the body known as acupuncture points. Each acupuncture point has a specific healing effect. Some acupuncture points have been found to reduce itching, even with the use of massage.

For teenagers and adults, the acupuncture needles are placed in specific healing areas and retained for 20-30 minutes. The acupuncture points are selected based both on your symptoms and the TCM imbalances that may be underlying the condition. The needles are very gently inserted into the acupuncture points. Sometimes you will feel a small prick, but most often people do not feel anything upon insertion. Common feelings during acupuncture are a warmth and tingling feeling. Often a small amount of electrical stimulation will be placed on the needles. This enhances the anti-itch and antihistamine response of the treatment. Most people leave the therapy feeling refreshed and relaxed. People often fall asleep during the treatment.

For infants and children, the acupuncture points are usually gently stimulated and massaged, which is called acupressure, or stimulated with dull instruments. This avoids any discomfort and aversion by the children to the therapy.

## **How Does Acupuncture Work for Eczema?**

Acupuncture helps to break the cycle of itching and inflammation to help bring comfort to the patient and speed the healing process. Acupuncture can do this in both specific ways to reduce discomfort with eczema and encourage overall wellness.

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### **Acupuncture Reduces Itch**

Itch is often the primary symptom of eczema. Acupuncture has been shown to reduce itching in those with eczema.<sup>5</sup> Acupuncture works in several ways to reduce itch. A previous study showed that acupuncture reduces itching by changing the itch response in the brain.<sup>6</sup> Acupuncture may also reduce itch by reducing activation of basophils,<sup>1</sup> a white blood cell that is involved in the inflammatory and itch responses in eczema.<sup>7</sup>

Not only does acupuncture reduce itching, but acupressure is also helpful. Acupressure is the massage and application of pressure at acupuncture points which is great because it is something you can do on yourself. One small study showed that self-administered acupressure at the acupuncture point Qu Che (LI 11) reduced itching.<sup>8</sup> Additionally, stimulation of LI 11 has also been shown to reduce scratching in animal studies.<sup>2,4</sup>

## Acupuncture Treats the Whole Person

One of the challenges with eczema is that it can make you tired, lose sleep, and feel generally fatigued.<sup>9</sup> One of the great things about acupuncture is no matter what you are coming in for, acupuncture helps you feel relaxed and improves wellness.<sup>10</sup> In addition, acupuncture is well known to reduce anxiety, improve sleep, and give you more energy, helping to improve overall mind body wellness.<sup>11</sup>



Acupuncture is also individualized for each patient based on your eczema symptoms, the appearance of your eczema, and overall physical well being. For example, if you have insomnia and anxiety, your acupuncturist may add the points An Shen (Quiet Spirit) and Shen Men (Spirit Gate) to help you sleep and calm your mind. If you have digestive symptoms, such as constipation, your acupuncturist may add the acupuncture point Tian Shi (Stomach 25) and Zu San Li (Stomach 36).

### Acupuncture Safety

Acupuncture is a very safe therapy and has only minor uncommon side effects.<sup>12</sup>

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# 18

## Chapter 18 Yoga and Mindfulness in Eczema

Sheila Jalalat, MD

### Key Takeaways:

- Eczema is typically worsened by stress and is associated with psychological distress.
- Yoga focuses on mindfulness through the use of physical postures, controlled breathing, and meditation.
- Yoga can help reduce stress and anxiety that may accompany eczema.



The potential correlation between yoga and chronic skin conditions is a growing topic with attention in the media as well as the doctors' offices today. With the rising trend of yoga, which encompasses physical postures, breathing, and meditation or mindfulness, it is no question that people will ask their doctor about this topic. In this chapter, a common skin condition called eczema and its potential benefits from yoga will be discussed.

### Eczema

Eczema is a common itchy rash characterized by scaly patches of dry and irritated skin. It is recognized as a multifactorial skin condition caused by genetics and can be worsened by environmental factors.<sup>1</sup> The occurrence of eczema is rising and reported to affect approximately 15–20% of children and 1–3% of adults.<sup>3,4</sup> Many studies have reported the role of stress in causing and worsening chronic skin rashes.<sup>1</sup> There is an abundance of evidence to support that eczema is worsened by stress.<sup>5–8</sup> In fact, it has been described that even stress in the prenatal environment can influence fetal skin barrier development and function.<sup>9</sup> More recently, it has been shown that even minor everyday stressors can affect and predict symptom severity.<sup>10</sup> Stress and eczema are thought to be related in a bidirectional fashion, perpetuating an itch-scratch-stress cycle.





### Yoga Today

Without a doubt, yoga has become a popular way for the mind and body to reach well-being with about 30 million people practicing regularly worldwide.<sup>11</sup> Yoga encompasses the combination of physical postures, controlled breathing, and meditation or mindfulness. With approximately 14 million Americans reporting that a physician or therapist has recommended it to them, it has certainly gained popularity as a therapeutic practice.<sup>12,13</sup> In fact, it has been suggested that people who practice yoga, even for a brief time, may benefit from decreased anxiety, stress, and discomfort resulting in a better quality of life.<sup>14,15</sup>

### Skin Conditions and Stress

It is well known that there is an interaction between the mind, skin, and body. Specifically, it has been described that the connection between our mood, immune system, and the way our skin handles stress can manifest as skin conditions.<sup>16-19</sup> Aside from stress being a well-known trigger of many skin conditions, eczema may also lead to abnormal skin-barrier function, such as wound healing or our skin's ability to fight off bacteria.<sup>20, 21</sup> Although stress is not thought to directly cause eczema, it does precipitate flares and worsen it for those that have eczema.<sup>22</sup> Likewise, eczema is frequently accompanied with several psychiatric disorders, such as depression and anxiety, with estimates at 30 to 60% be afflicted.<sup>23</sup> Therefore, it is important to consider a multifaceted approach when faced with chronic skin conditions.

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### How Yoga Can Help

Various studies suggest that people who participate in more mindful and relaxed yoga programs may see improvements in anxiety, somatic stress, and uneasiness, consequently affecting health-related quality of life. Not only has yoga been shown to help certain skin conditions, but a recent study also reported that 90-minute sessions of mindfulness meditation and gentle Hatha yoga over a 2-month period led to recognizable benefits on a cellular level in breast cancer survivors.<sup>24</sup> Other chronic conditions such as asthma and Type 2 diabetes mellitus have also been described to benefit from yoga as a supplement to current medical treatments.<sup>25,26</sup>

It is important to mention that people with certain dermatologic conditions are at risk for other medical problems; for example, psoriasis, another chronic skin disease is associated with metabolic diseases such as obesity, diabetes, and liver disease. This just highlights the importance in considering different approaches for a healthy mind and body as a supplement to medical care.

## Closing Statements

In summary, many skin problems, especially eczema, can cause stress and vice versa, creating a challenging cycle to overcome. Therefore, using additional tools like yoga may be beneficial. With accurate diagnosis by a dermatologist and appropriate medical treatments, yoga can help improve dermatologic problems and quality of life.

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# 19

## Chapter 19

### When Eczema Affects Your Hands: Hand Dermatitis

Jason Martin, MD and Ali Alikhan, MD

#### Key Takeaways:

- Hand dermatitis is a common disease with increased risk in individuals affected by atopic dermatitis and/or individuals working in occupations with exposure to wet work.
- The cause of hand dermatitis is most commonly multifactorial and involves factors such as irritant and/or allergen exposure and underlying skin barrier weakness.
- Prevention of hand dermatitis involves avoidance of allergens and irritants accompanied with use of moisturizers and/or barrier creams to preserve skin barrier function. Anti-inflammatory medical therapies can be used to treat acute or chronic hand dermatitis unresponsive to skin care and protective measures.

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#### Introduction

Each year, 10% of the population has an episode of hand dermatitis with 15% of the population affected over their lifetime.<sup>1</sup> Occupations including healthcare workers, dental workers, hairdressers, bakers, florists, housekeepers, and metal workers have an increased prevalence.<sup>2</sup> Hand dermatitis negatively impacts those affected. Reduced quality of life, sleep disturbances, increased medical costs, and interference with daily activities are common.<sup>13-6</sup>



#### What Are the Causes of Hand Dermatitis?

The cause of hand dermatitis is most commonly multifactorial.<sup>1,2,7,8</sup> Disruption of skin barrier function from inflammation and/or environmental exposures leads to increased water loss and vulnerability to irritants and allergens.<sup>9,10</sup> Wet work, defined as contact of the skin with liquids or occlusive gloves for more than two hours per day or hand washing more than ten times per day, is a strong risk factor.<sup>2</sup> Exposure to irritants and/or allergens is a common factor in the development and persistence of hand dermatitis.<sup>11</sup> Patients with atopic dermatitis have increased risk of developing hand dermatitis.<sup>2,12</sup>



## What Are the Clinical Features of Hand Dermatitis?

### Irritant Contact Dermatitis

Irritant contact dermatitis is the most common single cause of hand dermatitis.<sup>13</sup> Irritants are chemical or physical agents that directly damage the skin. Commonly associated irritants include water, soaps, detergents, solvents, resins, food products, and plants.<sup>2,11</sup> Lesions of acute irritant contact dermatitis vary from mild irritation to chemical burns depending on the strength of the agent and duration of contact. Chronic irritant dermatitis presents as red, dry, and scaly patches that progress to form thick and cracked plaques. Acute and chronic forms can have associated itching or pain.

### Allergic Contact Dermatitis

Allergic contact dermatitis is a delayed inflammatory response to allergens the skin has been sensitized to. Commonly associated allergens include preservatives, nickel, fragrances, organic dyes, rubber additives, plants, resins, and topical antibiotics.<sup>2,11</sup> Lesions of allergic contact dermatitis are often indistinguishable from lesions of irritant dermatitis. Patch testing is recommended in cases of chronic hand dermatitis to assess for relevant allergens. Patch testing should include standard-series patch testing with addition of allergens guided by occupation and exposure history.<sup>15</sup>



### Atopic Hand Dermatitis

Atopic hand dermatitis results from underlying weakness of skin barrier function.<sup>15</sup> It presents as redness, scaling, and cracking involving one or both dorsal hands, dorsal fingers, and palms. Involvement of the wrists is also typical, and the feet may be simultaneously involved. Diagnosis may be difficult if hand dermatitis is the only manifestation and sites typical to atopic dermatitis, including the flexural areas of the arms and legs, are unaffected. Atopic dermatitis increases sensitivity of the skin to irritants and allergens, therefore environmental causes for flares must be ruled out.<sup>2,12</sup>

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## **Pompholyx**

Pompholyx presents as recurrent crops of deep-seated blisters on the palms and/or palmar aspects and sides of the fingers. Pompholyx is very itching and painful cracks can occur. Similar symptoms often affect the feet. Hot weather, sweating, and occlusion can aggravate pompholyx.<sup>15</sup>

## **Hyperkeratotic Hand Dermatitis**

Hyperkeratotic hand dermatitis is a chronic disease that commonly affects middle-aged men.<sup>16</sup> It presents as thick, scaly, plaques involving the palms. Painful cracks involving the folds of the palms are common.

## **Nummular Hand Dermatitis**

Nummular hand dermatitis presents as itchy, circular plaques on the backs of the hands and fingers. Plaques can be scaly and/or have tiny blisters. Lesions can be limited to the hands but are usually part of a more extensive rash involving the body and extremities.

## **What Is the Treatment for Hand Dermatitis?**

Goals of treatment include improving symptoms, preventing relapses, and improving quality of life. Treatment should be individualized and must address the identification and avoidance of irritants and allergens, restoration of skin barrier function, and reduction of inflammation. Avoidance of allergens and irritants is paramount to treating and preventing hand dermatitis. Complete avoidance of irritants and allergens is ideal. When avoidance is not practical, preventative measures are recommended. Occlusive gloves with cotton liners can be used to reduce irritant/allergen exposure and soiling of the hands. Consulting the safety data sheet of the chemical encountered can help identify suitable glove materials. Drying of hands prior to putting on gloves and frequent removal of gloves can help to avoid moisture/sweat build-up in gloves.<sup>15,17-20</sup> Hand washing should be limited to only when the hands are visibly soiled. When

the hands are not visibly soiled, an alcohol-based sanitizer can be used.<sup>18,21</sup> Hands should be washed in lukewarm water using a mild fragrance-free cleanser and patted dry to remove of excess water. Immediately after washing, generous amounts of hand cream or ointment should be applied. Use of hand creams and ointments should be repeated many times daily to improve hydration and barrier function of the skin.<sup>16,22</sup>

Medical therapy is guided by severity and follows a stepwise progression based on severity and response. First-line therapies consist of topical steroids and topical calcineurin inhibitors.<sup>2,15,23-25</sup> Severe disease or disease that does not adequately respond to topical therapies may require phototherapy or systemic therapies including oral retinoids, methotrexate, cyclosporine, azathioprine, or oral steroids.<sup>2,15,26-30</sup>

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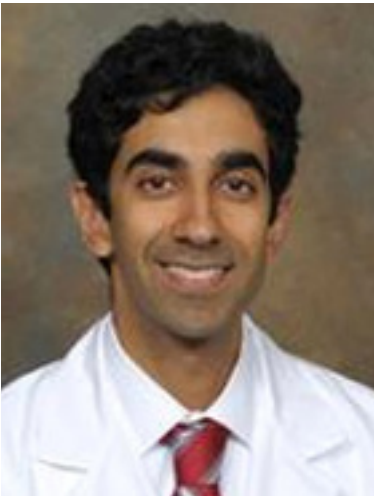


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# 20

## Chapter 20

### Eczema: Past, Present, and Future

Vivian Shi, MD

#### Key Takeaways:

- Eczema is a condition that has been recognized for many centuries.
  - Treatment involves both maintenance therapies and therapies to control acute flares.
  - More research and educational programs need to develop that incorporate an integrative approach to the management and treatment of eczema.
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Eczema is an ancient condition documented in one of the earliest medical references from Egypt in 1,500 BCE.<sup>1</sup> Since the 1970s, the incidents of eczema have risen dramatically, especially in developed countries.<sup>2,3</sup> Though the exact reason for this epidemiologic shift remains unknown, eczema experts believe it may be due to a constellation of environmental changes towards more “hygienic” practices, frequent use of antibiotics at a young age, and increased pollution exposure as urban populations

grow. Despite being an ancient condition, we are still in the early stages of understanding the causes of eczema. What we do know for certain is that eczema is a chronic condition that exerts a heavy psychological, social, and economic burden for the patient, caregiver, and our community. As we see in this eBook, successful eczema management requires a proactive and informed care team that includes the patient, caregivers, and providers. Patient and caregiver-oriented education should be the center of eczema management.

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Within the modern era of medicine, eczema has mainly been treated with topical steroids and moisturization. Though systemic medications have been widely used for severe cases, no single systemic medications had been approved specifically for the treatment of eczema. One can arguably say that the available treatment for eczema lags behind psoriasis, another chronic debilitating skin condition, by nearly 15 years. The first “biologic,” or targeted treatment for psoriasis was approved in 2003,<sup>4</sup> while the first targeted treatment for eczema (dupilumab) was only approved in 2017.<sup>5</sup> Nevertheless, we have witnessed tremendous advancement in the

understanding of eczema and development of new treatment modalities over the past decade. As more scientific proof becomes available, antimicrobial therapies such as bleach bath, microbiome modulation using probiotics and prebiotics, natural oil moisturizers, and alternative bathing additives are added to the repertoire of eczema treatment. Increasingly more patients and caregivers are seeking complementary and alternative medicine (CAM) to manage eczema. In fact, over 50% of them are incorporating CAM methods.<sup>6</sup> Though traditional eczema treatments such as natural oil moisturizers, acupuncture,



Traditional Chinese Medicine, and herbal remedies have been used for centuries, they were backed with limited scientific studies until the past three decades. In the upcoming decades, we expect a number of new and targeted systemic medications to become available for both children and adults. These modalities are expected to be safer, less immunosuppressive, and more effective. As we continue to acquire more scientific evidence on both CAM and Western medical practices, we should continue to see more integrative approaches to managing chronic conditions such as eczema.

We are entering a new era for eczema. The current and future directions for eczema research is multifold and includes epigenetics (how our genetic expressions change according to our environment), identification of more immune targets, and deciphering the complex interplay between them. The future holds promise for more robust clinical trials to validate the effectiveness and safety of CAM therapies and how they can be integrated with mainstream Western medicine.

Despite recent advances, several unmet needs remain for the field of eczema. Fortunately, prototypes of each of these already exist or are being developed. First, more well-supported outreach and educational programs are needed to help identify eczema earlier and in underserved communities. Second, development of a practical and affordable multifunctional e-tool is needed to help eczema patients track eczema severity and triggers, alarms for



treatment schedules, alerts for environmental changes, and a built-in platform to assist communication among peers and providers. Third, a comprehensive database of eczema specialists and treatment centers (both Western and CAM practitioners) is needed to allow patients and caregivers to search for suitable providers in their area. Fourth, development of more evidence-based eczema educational resources written in a language that is easily accessible to patients and caregivers are needed - and that is the goal of this book.

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## ***ADDITIONAL RESOURCES***

*to learn more about eczema and related treatments:*

### **National Eczema Association (NEA)**

[www.nationaleczema.org](http://www.nationaleczema.org)

### **American Academy of Dermatology (AAD)**

[www.aad.org/public/diseases/eczema/atopic-dermatitis](http://www.aad.org/public/diseases/eczema/atopic-dermatitis)

[www.aad.org/public/kids/skin/eczema/what-is-eczema](http://www.aad.org/public/kids/skin/eczema/what-is-eczema)

### **National Institute of Arthritis and Musculoskeletal and Skin Diseases (NIAMS)**

[www.niams.nih.gov/health-topics/atopic-dermatitis](http://www.niams.nih.gov/health-topics/atopic-dermatitis)

### **Chicago Integrative Eczema Center**

[www.chicagoeczema.com](http://www.chicagoeczema.com)

### **National Eczema Society UK**

[www.eczema.org](http://www.eczema.org)

### **The Eczema Society of Canada**

[www.eczemahelp.ca](http://www.eczemahelp.ca)

### **Eczema Outreach Scotland**

[www.eczemaoutreachscotland.org.uk](http://www.eczemaoutreachscotland.org.uk)

### **Eczema Association Australia**

[www.eczema.org.au/managing-eczema](http://www.eczema.org.au/managing-eczema)

### **Eczema Guide - Canada**

[www.eczemaguide.ca](http://www.eczemaguide.ca)

### **LearnSkin eCourses**

[www.LearnSkin.com](http://www.LearnSkin.com)

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