

Nutritional Detoxification In Psoriasis, Eczema And Acne

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Introduction

In recent years estheticians and other skin care professionals have begun to recognize the importance of nutrition and supplementation in the prevention and management of various skin conditions and in the optimization of skin health and total body wellness. Clinical and experimental studies indicate that a number of common skin conditions, such as psoriasis, eczema, seborrheic dermatitis, and possibly acne, are highly responsive to nutritional management. Skin smoothness can also be enhanced through specific dietary manipulation and supplementation with essential oils, B-vitamins and antioxidants, at established doses. As well, antioxidant supplementation has been shown to reduce ultraviolet light-induced skin damage that is linked to premature aging and skin cancer. In regards to nutrition and detoxification, research reveals that many skin conditions are aggravated by faulty detoxification mechanisms, excess toxicity and compromised liver function.

The liver is the main blood filtration plant to neutralize and eliminate toxins from the body. Conversely, a number of skin conditions have been shown to respond favorably when the body's detoxification centers are supported through dietary manipulation and the appropriate use of supplements. Thus, nutritional support is a vital aspect of skin health and appearance, and optimizing detoxification is a primary target in the treatment of a variety of common skin conditions. Although enhancing detoxification is not the only role of nutritional management for skin conditions, it is an often overlooked area of intervention.



How Detoxification Works

As various toxins, end products of metabolism and certain prostaglandin hormones, are known to affect the health and appearance of the skin, a basic review of the body's detoxification systems is germane to this discussion.

Essentially, the body eliminates toxins and end products of metabolism either by directly neutralizing them or by excreting them in the urine or feces (and to a lesser degree, from the lungs and skin.) Approximately 25% of detoxification occurs within the cells lining the intestines and 75% occurs in the liver. Almost two quarts of blood pass through the liver every minute for detoxification. Any bacteria in the blood are intercepted and destroyed by the Kupffer cells in the liver upon contact. Kupffer cells clear 99% of the bacteria from the blood that enters the liver before it is allowed to re-enter the general circulation. In both liver cells and intestinal cells detoxification of other toxins, hormones, end products of metabolism, prostaglandins, drugs and other chemicals occur primarily via the Phase I and phase II detoxification processes. These systems are highly responsive to dietary and supplementation interventions as we shall discuss, and any disruption to these detoxification centers can have far-reaching effects on the health of the body and often involve manifestations to the skin.

Phase I Detoxification

Phase I detoxification involves a group of enzymes called the mixed function oxidase enzymes (cytochrome P450 system), which comprise 50 to 100 different detoxifying enzymes. Essentially, The Phase I detoxification enzymes convert xenobiotics (toxins) to a less toxic form, make them water-soluble, or as most often is the case, convert them to a more active and dangerous substances (e.g., free radicals), which are in turn neutralized through the Phase II detoxification system.

Phase II Detoxification

As stated, the Phase II detoxification enzymes act on the active and dangerous metabolites that were generated in the Phase I detoxification system, neutralizing these substances and preparing them for elimination from the body. Some Phase II detoxification enzymes can act directly on various toxins (heavy metals, liver toxicants, bacterial and microbial compounds and endotoxins and end products of metabolism) and convert them into compounds that the body can more easily eliminate. However, for the most part, Phase II detoxification mainly functions to intercept the highly reactive and dangerous metabolites, produced via the Phase I detoxification system. Thus, the Phase I and Phase II detoxification systems in the intestinal cells and liver cells work synergistically to rid the body of potentially harmful and toxic substances. As such, both Phase I and Phase II detoxification must be working at peak levels to prevent the build-up of toxic by-products.



Nutrition And Detoxification

For both the Phase I and Phase II detoxification systems, dietary factors and nutritional supplementation have been shown to exert profound influences on their detoxification capabilities and thus, are important considerations in the comprehensive management of many skin conditions as well as to enhance skin texture, and appearance in general.

Dietary factors that are known to enhance Phase I detoxification enzymes include cabbage, broccoli and brussels sprouts (cruciferous vegetables), oranges as well as Niacin (Vitamin B3), Riboflavin (Vitamin B2) and Vitamin C.

Dietary factors that enhance the Phase II detoxification system generally, include cabbage, broccoli and brussels sprouts (cruciferous vegetables.) In Phase II, reactive intermediates are conjugated with small chemicals to neutralize them and/or make them easier to eliminate (e.g., make them more water-soluble for easier excretion).

There are primarily six conjugation reactions that quench the reactive intermediates created in Phase I detoxification:

- Glutathione conjugation
- Amino acid conjugation
- Methylation
- Sulfation
- Acetylation
- Glucuronidation

Each of these Phase II conjugation reactions can be enhanced by specific nutritional factors as well:

- Glutathione Conjugation – is enhanced by Vitamin C, Vitamin E, selenium and Vitamin B6.
- Amino Acid Conjugation – requires the presence of a number of amino acids, especially glycine
- Methylation – requires the B-vitamin folic acid, Vitamin B12 and choline.
- Sulfation – requires the sulfur-containing amino acids, cysteine, methionine, and the mineral molybdenum.
- Glucuronidation – is enhanced by the presence of Omega-3 fats from fish.
- Acetylation – requires the presence of pantothenic acid (a B-vitamin)

Of interest to estheticians and skin care professionals is the evidence to suggest that providing nutrition and supplementation support to the liver improves the skin's complexion and is a useful intervention in the treatment of acne (where low glutathione levels are a common feature), psoriasis and seborrheic dermatitis. B-vitamin and antioxidant supplementation has been shown to be very helpful in this regard.

Additionally, lack of detoxification imposed by an imbalance of gut bacteria (dysbiosis) and leaky gut syndrome (a condition whereby excess toxins and partially undigested proteins are allowed to be absorbed into the bloodstream, to cause inflammatory reactions) are also known to be involved in psoriasis and eczema (atopic dermatitis).



Intestinal Tract Health And Detoxification

The health status of the intestinal tract can also affect the health of the skin and modify certain skin conditions. The primary role of the gastro-intestinal tract is to digest and absorb nutrients to meet the metabolic requirements and demands for normal growth and development. In addition, the intestinal lining cells (mucosal cells) provide a protective defense against the constant presence of foreign agents (antigens) and microorganisms (e.g., pathogenic bacteria) in the gut lumen. Protection against potentially harmful agents is ensured by many factors, including saliva, gastric juices, peristalsis, mucus, intestinal protein digestion (proteolysis), intestinal flora, etc. As well, the surface of the intestinal lining is protected by a local adaptive immune system known as the gut-associated lymphoid tissue, which constitutes an important part of the body's overall immune capacity. Immunoglobulin A (IgA) antibody production is abundant on the intestinal cell surface.

As mentioned, the gut microflora, which is comprised of at least five hundred different species of bacteria, is an important aspect of protection, neutralizing (detoxifying) certain compounds, modifying immune response, and controlling inflammatory reactions, which can involve the skin. (20) Some gut bacteria are known to exert health-promoting effects on the body, while others may produce effects that adversely affect our health status. Intestinal dysbiosis (toxic bacteria) is defined as a state of altered flora in the gut. In dysbiosis, organisms that do not normally cause infection, including bacteria, yeasts, and protozoa, induce disease by producing toxins or altering the nutrition or immune response of the body.

Overuse of antibiotics and poor dietary habits has contributed to the rise in dysbiosis seen in developed countries including the United States and Canada.

Dysbiosis is linked to some skin condition. Patients with psoriasis, for instance, have been found to have high levels of circulating endotoxins from bacteria and show improvement of their condition when placed on the drug cholestyramine, a strong binder of endotoxins in the gut. In fact, in a controlled study of 92 psoriatic patients, supplementation with sarsparilla (a naturally-occurring high fiber substance known to bind endotoxins in the gut) demonstrated marked improvement in 62% of the patients, with complete clearance in 18%.

Thus, as a treatment for a number of dysbiotic-related conditions, scientific investigation has focused on the impact of re-establishing a normal gut microflora through the supplementation of probiotics (live friendly bacteria) or prebiotics (the food that enables the friendly bacteria to grow and replicate, crowding out the unfriendly bacteria). Prebiotics proven to improve the bacterial flora of the large bowel include FOS (fructo-oligosaccharide) and inulin. Studies on humans reveal that probiotic or prebiotic supplementation can improve immune elimination processes, enhance the body's overall immune response, and reduce hypersensitivity reactions (including some food allergy responses and skin reactions).

Moreover, improvement has been seen in many patients involving inflammatory diseases, including cases of atopic dermatitis (eczema). As a natural detoxifier of the bowel, probiotic and prebiotic supplementation have also been shown to decrease unfavorable metabolites (e.g., amonium and procarcinogenic enzymes in the colon).

Hence, an altered state of gut flora, whereby the unfriendly bacteria are disproportionately higher than the friendly bacteria, appears to create an environment that is conducive to dis-ease and hypersensitivity reactions, some of which can affect the skin.

In the year 1907, Elie Metchnikoff first identified that a state of dysbiosis had harmful effects on the body. He theorized that toxic compounds, produced by the bacterial breakdown of food were the cause of many degenerative disease. Metchnikoff supported probiotic supplementation as a health and longevity intervention in the early 1900's. In recent years, renewed interest in the use of probiotics has been seen (especially the use of *Lactobacillus acidophilus* and *Bifidobacterium bidfidum*) with a significant number of clinical trials having been published in the past decade.

Overall, the evidence suggests that in selected cases, the use of a probiotic or prebiotic supplement can improve intestinal detoxification, immune function and, as such, be a useful adjunct in the treatment of eczema, food allergy, sensitivity reactions, and possibly the treatment of psoriasis.



Leaky Gut

The problems created by dysbiosis are made worse when the intestinal lining (mucosal barrier) becomes damaged (or leaky), permitting greater entry of undesirable bacteria, bacterial toxins, yeasts and partially digested proteins to be absorbed from the intestinal tract into the bloodstream. This in turn results in a marked overload of toxic material reaching the liver, stressing the detoxification systems to the limit. In fact, many of these toxic materials are left unchecked and produce inflammatory and allergic-type reactions in various tissues (antigen-antibody reactions) causing or making worse a number of degenerative conditions, including eczema, psoriasis and urticaria (hives).

Many factors are known to damage the gut lining, leading to leaky gut syndrome, and thereby produce signs and symptoms of ill health, including the aforementioned skin conditions. The most common causes of leaky gut syndrome include food allergies, dysbiosis and intestinal infections, the use of non-steroidal anti-inflammatory drugs (e.g., aspirin, ibuprofen), excessive alcohol ingestion, other toxins and the aging process itself.

Thus, the intestinal tract, as well as the liver, requires attention from a nutrition and supplementation standpoint, in the prevention and management of eczema, psoriasis, urticaria and possibly acne. A simple and basic approach to cleanse the bowel of unwanted toxins and enhance intestinal detoxification and immune function is to increase fiber consumption from whole grain products (e.g., high fiber breakfast cereal, wheat bread) fruits, legumes (peas and beans) and fiber-rich vegetables. The use of a fiber supplement may also be helpful (e.g., psyllium husk, flaxseed powder, pectin).

Fiber has been shown to hasten the elimination of toxins from the large intestine, decreases toxin absorption into the body, increases the excretion of bacterial breakdown products and provides nourishment of the friendly bacteria in the gut (particularly fruit, vegetables, beans, onions and bananas). In cases where skin conditions are present, the use of a daily probiotic supplement (containing 5-10 billion of live lactobacillus and bifidus bacteria) or prebiotic supplement (containing a minimum of 1,000 mg per day of FOS and inulin) should be considered, based upon recent evidence with eczema cases.

For older patients (after age 45-50) and patients with sensitive skin, the additional use of a full complement digestive enzyme supplement (preferably combined with prebiotics such as FOS and inulin), can help the body more completely digest proteins and carbohydrates, reducing the tendency for inflammatory and allergic reactions to occur within the blood stream and other tissues, including the skin. Of course, minimizing alcohol consumption and discouraging over-reliance on the antibiotics and nonsteroidal anti-inflammatory drugs are also important strategies.

In more advanced cases, you may wish to refer the client to a Naturopath or Holistic Practitioner to screen for specific food allergies or environmental sensitivities that may also aggravate these skin problems.

In the final analysis supporting intestinal detoxification, intestinal cleansing and the growth of friendly gut bacteria, are important considerations in the global management of eczema, psoriasis, urticaria, acne vulgaris and possibly seborrheic dermatitis.



Basic Support Of Detoxification Processes For Various Skin Conditions

As reviewed in this article, impairment to the body's detoxification systems and/or an escalation of blood-borne toxins or allergens have been shown to contribute to the development or exacerbation of certain skin conditions, including eczema, psoriasis, acne, urticaria and seborrheic dermatitis. In addition to topical treatments for these conditions, the following basic nutrition and supplementation practices deserve consideration in the holistic management protocol:

1. To support liver Phase I and Phase II detoxification consider:

- A high potency multiple vitamin that is enriched with a B-50 complex and antioxidants:
- Vitamin C: 1,000 mg
- Vitamin E: 400 I.U.
- Selenium: 100-200 mcg
- Beta-carotene: 10,000-15,000 I.U.
- Daily intake of cruciferous vegetables and/or an immune-detox support supplement, containing indole-3 carbinol (active detoxifier in cruciferous vegetables) and milk thistle (standardized to 80% silymarin content). Milk thistle supports liver glutathione levels and is known to repair and regenerate damaged liver cells, improving detoxification capacity; especially in cases where previous liver problems have occurred as in hepatitis-C, alcohol damage, or damage from other toxins and infections.
- The use of a daily protein or wellness shake, rich in soy and whey protein (provided the client is not sensitive to these proteins). These proteins support amino acid conjugation reactions in the liver, strengthen the immune system and the intestinal barrier to toxins. Soy isoflavones also enhance the performance of many Phase II liver enzymes, making them more efficient.

2. To support intestinal tract detoxification consider:

- A more fiber-rich diet and/or a fiber supplement (e.g., psyllium, flaxseed powder)
- The use of a probiotic supplement (e.g., 5-10 billion live bacteria, primarily lactobacillus acidophilus and bifidus, per day) or a prebiotic supplement (containing at least 1,000 mg of FOS and inulin)
- The use of a high potency, full complement digestive enzyme supplement (from non animal-based sources) for clients over 45, or in clients with increased food sensitivities, digestive disorders, and tendency towards inflammatory reactions. (some digestive enzyme products now include prebiotics such as FOS and inulin, helping to streamline the efficacy and use of intestinal support supplementation).
- Minimize the intake of alcohol and other damaging environmental agents known to damage the intestinal lining or suppress the growth of friendly gut bacteria.

These basic interventions to support the body's detoxification processes enable you to provide your client with proven, effective complementary strategies to help combat many chronic-recurrent skin problems. Detoxification support through the use of nutrition and supplementation represents an important therapeutic target in these cases. Through the inclusion of dietary and supplementation recommendations, skin care professionals can deliver a more comprehensive and efficacious treatment plan in the management of various skin conditions. This course of action also opens up a new stream of revenue through the sale of a professional line of supplements. Key products to stock in this regard include:

- A high potency multiple vitamin and mineral supplement (as outlined previously)
- An immune-detoxification booster product (as outline previously)
- A full complement, high potency, digestive enzyme supplement (non animal source) that also includes prebiotics (FOS and inulin) at a minimum of 1,000 mg per day.
- A probiotic supplement product (optional, as it requires refrigeration in your clinic)

Be aware that for each of the skin conditions mentioned in this article other nutritional factors should also be addressed that affect prostaglandin synthesis, the inflammatory response and secretory function of the skin. Nevertheless, nutritional support of intestinal and liver detoxification is a vital, and often neglected, aspect of skin care management. As such, estheticians and skin care professionals should be aware of the association between detoxification systems and skin health, and be prepared to engage clients in evidence-based nutrition and supplementation practices that can help improve conditions of the skin.

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