

Nutrition: Acne, Eczema, Psoriasis, and Other Skin Conditions - Part 1

Hey, everybody, in this presentation we're going to talk about nutrition for skin conditions. Skin health is an important factor when many patients switch to a Paleo type of diet. Common skin conditions that plague people living in industrialized societies primarily include acne vulgaris, acne rosacea, eczema, dry skin, wrinkles, sun damage, psoriasis, rashes, fungal infections, and keratosis polaris, just to name a few.

Conventional medicine often discounts the connection between skin health and diet, but as most of you I'm sure know, food choices can strongly influence the health of our skin. Certain vitamins, minerals, and other dietary nutrients impact skin growth and immunity, and we're going to discuss several nutrients that are particularly important for skin health in the slides to follow.

Let's start with vitamin A. Synthetic retinoids have been used for acne and psoriasis since the 1980s. They promote epidermal differentiation and cell turnover, prevent the formation of comedones that cause acne, modulate dermal growth factors, inhibit sebaceous gland activity, and suppress androgen formation. Lack of vitamin A causes hyper-keratinization and suppressed mucous secretion. Rough, dry skin and keratin plugs or keratosis polaris is a common sign of vitamin A deficiency, and keratosis polaris is found in about 40 percent of adults living in the industrialized world.

Natural sources of preformed vitamin A are essential to supplementation. Beta carotene, which is a precursor to vitamin A, is in theory converted into retinol—active vitamin A—but that conversion doesn't happen well in many people, so it's best to eat preformed vitamin A or retinol. This is only found in liver, kidney, grass-fed dairy, pastured egg yolks, and cod liver oil. So, supplementing with extra-virgin cod liver oil is a great option for many people, especially if they don't like to eat organ meats, a dose of one teaspoon per day. If your patient does like to eat organ meats, then about four to six ounces per week of beef liver is a good place to start.

Zinc plays a role in the skin's immune function, protein synthesis, wound healing, DNA synthesis, and cell division. It protects against ultraviolet radiation and has anti-inflammatory effects. Studies show that dietary zinc may reduce acne as effectively as antibiotics like tetracyclines. It interacts with vitamin A as a component of retinol-binding protein, and it significantly increases the level of vitamin A in the blood. People with serious acne have been found to have lower levels of serum zinc than controls without acne.

Dietary sources of zinc are more bioavailable in animal foods than plant foods because zinc is often bound to fight phytic acid in plant foods. The best food sources are organ meats like kidney and liver, red muscle meats like beef and lamb, and then shellfish like oysters and scallops. Plant foods like pumpkin seeds and other nuts have high zinc content on paper, but as I mentioned, the zinc in

these foods is less bioavailable. Soaking and sprouting nuts and seeds can help liberate some of that bound zinc, so they can still be good sources if they're prepared properly.

Vitamin C is an antioxidant that's crucial for the production and regulation of collagen, and collagen maintains extracellular stability of the skin. Loss of collagen leads to wrinkles, sagging skin, and loss of structure in the skin. Severe vitamin C deficiency has been shown to cause scurvy, and the initial symptoms of scurvy are rough, red, dry skin, corkscrew hair, and bleeding gums. Inadequate vitamin C also contributes to keratosis pilaris; the hair follicles become damaged when collagen formation is impaired. Studies show that diets that are high in vitamin C are associated with better skin appearance and reduced wrinkles. Vitamin C may prevent and treat ultraviolet-induced photo damage, so if a patient is spending a lot of time in the sun, vitamin C can be ever more important. It decreases dry skin by reducing trans-epidermal water loss, and it's important for wound healing and improves scar tissue repair.

The highest food sources of vitamin C are bell peppers, guava, dark leafy greens, broccoli, Brussels sprouts, citrus fruits, and strawberries. Consuming a wide variety of plant foods regularly is the best way to get adequate vitamin C in the diet. A mix of raw and lightly cooked plants is best because vitamin C is heat-sensitive, so it would be destroyed in the higher-temperature forms of cooking.

Omega-3 fats play an important role in skin health. They are anti-inflammatory and reduce systemic inflammation. Western diets tend to be highly skewed towards potentially pro-inflammatory omega-6 fats. This is perhaps one reason why we see such an increase in the prevalence of inflammatory skin conditions like acne, eczema, psoriasis, and rosacea in people following an industrialized diet. High levels of omega-3 fats decrease skin inflammation, reduce insulin-like growth factor, and prevent hyper-keratinization of sebaceous follicles. Atopic dermatitis and psoriasis have been shown to be improved by omega-3 supplementation, and this is likely due to inhibition of arachidonic acid and reduced inflammation. Omega-3 fats also reduce redness, itching, and scaling, and they can inhibit inflammation caused by ultraviolet radiation and may reduce skin cancer risk.

The best source of omega-3 fats, or the long-chain omega-3 fats EPA and DHA, is found in cold-water fatty fish, so I recommend eating about 12 to 16 ounces of these types of fish per week. These would be things like sardines, salmon, mackerel, trout, anchovies, black cod, and then shellfish like oysters, and then reducing the intake of omega-6 fats from industrial seed oils like corn, soy, canola, and cottonseed oil. Although some whole foods like poultry and nuts, pork, and avocado are high in omega-6, clinically I've found that reducing intake of these foods is not helpful or necessary when it comes to skin conditions or inflammatory disorders in general.

Biotin is an essential cofactor for enzymes that regulate fatty acid metabolism. Fatty acids in the skin help protect cells against damage and water loss, and inadequate biotin intake causes hair loss and scaly red dermatitis, seborrheic dermatitis in adults, and it can also contribute to dandruff.

True biotin deficiency is rare unless a patient is consuming raw egg whites. Avidin is a protein in raw egg whites that binds with biotin and prevents its absorption in the gut. But some patients might need additional doses of biotin in order to get a therapeutic effect, and so they can focus on eating foods like egg yolks, liver, Swiss chard, romaine lettuce, almonds, and walnuts. It's also worth pointing out that biotin is produced by beneficial bacteria in the gut, so if biotin is low, focusing on restoring a healthy gut ecosystem is important as well.

Selenium is a nutrient that has decreased in its availability due to poor levels in soil, degradation of soil quality, and also in intestinal disorders, malabsorption can lead to deficiency of selenium. Selenium is a component of selenoenzymes that allow glutathione to function. Selenium in the diet may be protective against skin cancer; acne patients have been shown to have low levels of selenium compared to controls. Selenium supplementation has been shown to reduce the severity of acne, especially when it is combined with vitamin E.

It's best to get selenium from the diet because some studies that shown that long-term supplementation with even as little as 200 micrograms per day of selenium when the patient already has adequate selenium levels can cause an increase in prostate cancer risk in men. The best sources of dietary selenium are organ meats; you're seeing a theme here, right, with organ meats? Seafood—16 of the 25 highest sources of selenium in the diet are ocean fish and muscle meats, so fish like cod, tuna, halibut, sardines, and salmon are the best seafood sources, and then we have liver, kidney, beef, turkey, and lamb as the best muscle meat sources. But then there are Brazil nuts, which are really potent sources of selenium. Just two Brazil nuts a day, depending on where they're from, can provide up to 200 micrograms per day of selenium or even more. Just make sure that if the patient is eating these Brazil nuts, they're not also taking supplements, because selenium is one of several nutrients that is certainly toxic at higher doses.

Silica is an important nutrient for the skin. A silica-deficient diet has been shown to cause poorly formed connective tissue, including collagen. It interacts with glycosaminoglycans, or GAGs, to form building blocks of the skin tissue. It includes hyaluronic acid, a GAG that promotes cell proliferation, increases the presence of retinoic acid, and increases skin hydration. The impact of silica on collagen formation and hyaluronic acid may lead to increased skin firmness and elasticity.

Best food sources of silica would be leeks, green beans, garbanzo beans, strawberries, cucumber, mango, celery, asparagus, and rhubarb. It's also found in certain brands of water, for example Fiji water, and trace mineral drops can be added to plain drinking water, because they contain silica as well.

Niacin, or vitamin B3, is the next nutrient. Deficiency of B3 or niacin is called pellagra, and symptoms are dermatitis and a dark, scaly rash on the skin. Low intake of niacin is uncommon, but certain conditions can impair the absorption of niacin and increase its demand. So for example, celiac disease; in cases of celiac, absorption is impaired by swelling and thickening of the intestinal lining. Other conditions which might impair absorption of B vitamins, including niacin, would be

inflammatory bowel diseases like Crohn's or ulcerative colitis and small intestinal bacterial overgrowth, or SIBO.

Food sources of niacin include meat, poultry, tuna, salmon, seeds, milk, green leafy vegetables, coffee, and tea. The liver can convert tryptophan, which is a common amino acid in proteins, to niacin. Patients who have an increased need for niacin or a condition which inhibits absorption may benefit from supplementation, but be aware that as was the case with selenium, excessive supplementation with niacin can cause pretty significant side effects like flushing.