I use herbs, vitamins, and supplements because they extend my pharmacopoeia for helping patients with skin disorders. In some cases, they protect the patient treated with pharmaceuticals or surgery. In other cases, they add to the therapeutic effect or allow treatment of chronic disorders with fewer side effects than do conventional therapeutics alone. They often have actions for which we have no available drugs. Understanding their use requires introduction to different, more patient- than disease-centered healing systems and ultimately changes your thinking about how to choose therapeutic agents for your patients. Although these substances are inherently less potent and dramatic in their effects on clearance of symptoms than drugs such as steroids, they can be highly effective when chosen correctly as part of a complete regimen to shift the patient’s inflammation and physiology. As such, they can allow much more appropriate and safe dosing of our more potent conventional pharmacologic agents as part of a well-integrated treatment of dermatologic disease.

Past, Present, Future
Herbal extracts differ from single active chemical pharmaceuticals in that they contain a mixture of components that work together in concert in the plant and may well have a synergistic action in treatment.

We’ll discuss supplements here by their mechanism of action so that they can be easily incorporated into your current treatment plans, either to enhance activity or to spare the use of agents that have untoward effects in your patients. As long as we have diseases without known causes or cures, it is important to have access to alternative treatments that have potential efficacy—even if that has not been proven. Careful observation of the effects of these products by physicians who have an understanding of skin disease, its etiology, and nomenclature could advance the appropriate use of these products in a more useful way than those less trained.

Nevertheless, it is important to preserve the “Baker Street Irregulars” of the healing arts, who bring us perhaps thousands of years of observation and codification of use of plant-based substances from different cultural perspectives. They have always provided us with the raw material for development of new pharmaceutical treatments. Even more important is the perspective for therapeutic choice that alternative healing brings, and the possibility that such perspective could be applied to prevent the majority of adverse drug eruptions. To make it illegal to obtain supplements and herbs in adequate doses would not only harm the majority of Earth inhabitants treated traditionally but would also interrupt the flow of observation and information which leads to new pharmaceuticals and better protocols for their use.
In my practice, I use supplements that have physiologic actions helpful to my patient’s condition and which are touted in the lore to be helpful. That does not necessarily mean that there are studies in the literature that support their use in humans with that condition. I do so because my comfort zone with those products, or that of my patients, is greater than with the more conventional alternatives. Searching PubMed for almost any plant with well-known traditional use will reveal that researchers are already investigating the components and mechanisms of action on relevant laboratory tests.

Dermatology has always incorporated the use of plant-based medicines. Podophyllin comes from May Apple. Oatmeal, Aveena sativa, is used in baths to soothe the skin. Other plant-based treatments with documentation in the literature are discussed in previous publications.

**Supplements**

**Vitamin C.** Vitamin C, ascorbic acid, is an extremely important vitamin for the skin. It is necessary for proper collagen formation in wound healing and is important as an anti-oxidant and for maintaining proper immunity. We are familiar with topical forms of vitamin C, which are purported to have anti-aging effects on the skin. There is so much literature on vitamin C that I will touch the subject briefly and leave it to the reader.

As discussed below, my preference is for a form of vitamin C that is a crude extract from plant sources and contains the associated bioflavinoids. Anti-oxidants seem to work best in concert rather than alone, so I use a variety of anti-oxidants together for that purpose. The dose I use depends highly on the situation. I recommend 500-1,000mg one to three times a day, depending on the situation. The RDA is woefully inadequate, especially based on the levels of vitamin C manufactured by other mammals that have not lost that ability as have humans.

**Vascular effects**

**Bioflavinoids.** The bioflavinoids are some of the most underused supplements in dermatology. These are polyphenols derived from plants, which work in the plant, along with vitamin C, to protect it from free radical damage during its time in the sun. These were known to medical science and then somehow forgotten for several decades as the wave of miracle drugs and antibiotics came into being. Back in 1953, the Nobel Prize laureate Albert Szent-Georgi hosted a conference on bioflavinoids and the capillary at the New York Academy of Science. Bioflavinoids seem to protect the capillary from damage. Herbal lore tells us that different bioflavinoids protect different tissues preferentially. For example, British pilots during WWII used bilberry to give them better night vision. Citrus fruits his-
Supplements in Dermatology

In my medical training I learned a lot about drugs historically were used to treat scurvy, as were pine bark and pine needles.

I use bioflavinoids and vitamin C to treat disorders of capillary fragility. Uncontrolled observation over the past 25 years suggested to me that one half to a third of patients with “senile” purpura, or increased tendency to bruising associated with old age and skin atrophy, improved with addition of adequate amounts of vitamin C and bioflavinoids. I would use 500-1000mg vitamin C two to three times per day along with 1000mg bioflavinoids BID or TID in some patients. Those who could afford the more expensive Oleigoproanthocyanadins (OPCs) got about 1mg per pound of the grapeseed or pine bark product. I also use bioflavinoids in patients with excessive telangiectasias, such as on the face. Patients’ impressions based on their own observations are that treatment slows formation of new telangiectasias, but this is highly subjective and hard to substantiate.

Knowledge of how to choose the most effective bioflavinoids for skin conditions will emerge as dermatologists pool their observations about what works in which conditions and circumstances. Most of the use and observations on plant bioflavinoids clinically probably comes from non-dermatologists at this time.

Anti-inflammatories

Quercetin. A large portion of the disorders that we see in dermatology involve itching and redness with underlying inflammation. A number of anti-inflammatory supplements and herbs can be used for symptomatic help, which work somewhat like anti-histamines for the itching. Quercetin, a bioflavinoid found in onions and many other plants, is one of my favorites in this group. I give it regularly during the day and suggest that the patient take extra during episodes of itching. In some of my patients who are open to using pharmaceuticals, I have them take a sedating antihistamine at night to avoid digging at their skin and use quercetin during the day.

Quercetin has a number of effects on the inflammatory cascade, which leads one to believe that it would be useful in inflammatory disorders. These include inhibition of histamine release from basophils and mast cells. Quercetin has membrane stabilizing effects, in vitro effects on inhibition of steps in eicosonoid metabolism including inhibition of lipooxygenase, and in vitro inhibition of the transcription and activity of cyclooxygenase-2. Quercetin has also shown to have anti-inflammatory activity in vivo by down-regulating the NF kappa beta pathway. It preferentially decreases TH-2 associated cytokines. Quercetin also enhances apoptosis in tumor cells and has anti-cancer effects for a number of different cell types.

Chances are you may already be using quercetin, which is part of the Allium sepium extract incorporated in Mederma (Merz). Quercetin has been shown to inhibit scar formation, and Mederma has been shown to inhibit scar formation in an animal model. We have a lot of information implicating quercetin as being useful in skin disease for its anti-inflammatory, anti-oxidant, and other beneficial properties, but we do not have clinical studies on this product. I use quercetin orally at a level of 200-400mg three times per day, sometimes giving extra doses as needed for itch. Although it may be adequate as an anti-inflammatory alone in only some instances, combined with use of other anti-inflammatories it may have more benefits. Most of its other effects are protective of the body rather than detrimental.

Hepatics

Silymarin In my medical training I learned a lot about drugs that harm the liver but very little about substances that protect the liver. Herbal lore has a number of hepatics or herbs that have beneficial effects on the liver. One of the most prominent of these herbs is milk thistle or Silybum marianum. Silymarin is actually a collection of these flavonolignans including silybin, silydianin, silychristin, and apigenin. The flavinoids are also believed to act in mammalian tissues as free radical scavengers, as well as plasma membrane stabilizers, and thus confer protection to the cells during free radical stress generated by chemical reaction or radiation. It makes a lot of sense to use this or other hepatoprotective herbs when using potentially hepatotoxic medications. Years ago, it was brought into this country as the treatment for accidental mushroom poisoning. One of the most dramatic effects of silymarin in humans is in protection against hepatic damage and death due to ingestion of death cap mushroom and its components phalloidin and alpha amanitin. An additional method of hepatic protection against deathcap fungus toxins is prevention of their entrance into hepatic cells by competitive inhibition of cell surface receptors.

Silymarin protects the liver by a number of mechanisms. Its antioxidant activity protects the liver from free radicals generated during biotransformation by the p450 system. It also increases the endogenous antioxidant glutathione in the cells and in the mitochondria. It protects the cell membranes. It also enhances hepatic repair and regeneration by favoring regeneration of ribosomal RNA.

A most intriguing use for Silymarin is to reduce the chances of developing hepatotoxicity from drugs with that potential. I have seen a number of dermatologists on chat lines using silymarin in this way, despite the lack of published human studies. Hepatocyte culture studies indicate a reduced leakage of enzyme and decreased morphologic evidence of damage after exposure to a variety of drugs when cultures were pretreated with silymarin.

To further reduce the chances of hepatotoxicity, check which p450 enzymes are involved in the biotransformation of
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the drugs you are adding and the ones the patient is taking, looking for possible competition or activation of enzymes which will change the rate of metabolism of drugs whose concentration is critical. Keep in mind that adequate substrate is necessary for phase two liver detoxification, the carting out of p450 activated and solubilized substances ready for excretion. Without such substrate-glucuronides, etc., p450 activated intermediates will build up and cause more unexplained toxicity than by the drug itself. This is no doubt one of the reasons for some of the unexplained hepatotoxicity and other idiopathic drug eruptions. I have seen this as a cause of inability to wake up after surgery, which completely baffled the anesthesiologists. One hint is that the patient has had repeated courses of medication which, although different, seem to yield successively more side effects with each course.

**Skin Effects.** The anti-inflammatory activity is used in a Canadian product called Rosacure, which is used to reduce the redness in rosacea patients. Internal studies by the company show that the 0.7% silymarin-containing product significantly reduces erythema on the face but not telangiecstasia. It combines well with metronidazole cream use. In mice it protects against both photo and chemical induction of skin tumors.

**Dosage.** For the crude seed product, use 12-15gm per day. As a standard extract, silymarin is administered as three to six 56-175mg capsules or tablets per day (usually 200-400mg silymarin per day). As an alcohol tincture, 10 drops to 2ml are administered three times per day.

**Side effects.** Most references describe no side effects for this food grade herb. There is only occasional mention of slight gastrointestinal complaints. I am aware of one case of anaphylaxis and one anonymous report of an adverse reaction to milk thistle in a patient on amitriptyline. Recent in vitro studies suggest that silymarin may inhibit CP450 3A4 and 2C9, the former of which is involved in amitriptyline degradation. It may be of benefit in those who have slow phase II detox due to insufficient substrate.

**Horse chestnut.** One bioflavinoid which has been well documented in the dermatologic literature for its effect on specific target tissues is eschin from horse chestnut for use in chronic venous insufficiency of the legs. Multiple studies show reduction in leg volume comparable to compression stockings using horse chestnut extract. Eschin increases tone, reduces edema, and decreases inflammation. Its effectiveness in the treatment of varicose veins of the leg has been documented in the dermatologic literature. The dosage of tablets or tincture should be calculated to deliver about 80-120mg of escin(aescin) per day in divided doses. Gastrointestinal irritation can occur from taking uncoated tablets, but significant side effects are extremely rare. It is a useful adjuvant to treatment of both large varicosities and sunburst telangiectasias, in a program including leg elevation, support hose, sclerosing injections, and Doppler evaluation for further surgical treatment as necessary.

**Enzymes**

**Bromelain.** Bromelain is an enzyme present in the stem of the pineapple. If taken with meals, it will aid digestion. If taken an hour before meals or two hours after, it will be picked up by the WBCs and aid in the lysosomal pool for breakdown and cleanup as in the remodeling which takes place after injury or surgery. Studies have shown that bromelain is indeed absorbed as an intact molecule. It is useful in these conditions, as well as in other forms of inflammation. I use two capsules three to five times per day between meals as indicated above. It is known to reduce swelling, pain, healing time, and bruising following surgery or trauma. It is also known to be fibrinolytic, affect platelets, have anti-tumor properties, be anti-inflammatory, and help in debridement. Despite its anti-platelet effects, it does not seem to promote bleeding in skin surgery. Keep an eye on the literature on this. Years ago, a product in the PDR known as Ananase was available to speed up dissolution of hematomas.

I had been using bromelain for inflammation and surgery for some time, to the occasional rolled eyes of my colleagues. I also used a homeopathic product known as Arnica 30C to reduce pain and improve healing after surgery. My colleagues at Columbia University had asked their resident Naturopath for suggestions to improve their post-surgical results and presented such a regimen at one of the advanced surgical courses at the AAD meeting some years ago. I found that a lot of my patients undergoing minor surgery needed little or no codeine when they used arnica.

**Essential Fatty Acids**

Every dermatologist should know about the uses of essential fatty acids (EFA’s). Early observations indicated that unsaturated oils applied to the skin of parenterally fed children corrected an eczema-like scaliness of their skin. Linoleic acid was thought to be the active ingredient. We now know this to be part of the omega-6 family of essential fatty acids. One critical role for EFA’s is incorporation in the lipid sandwich which gives skin its barrier capability. Reduction of inflammation and proper body function require a balance between these omega-6 and the omega-3 essential fatty acid. This article will focus on the anti-inflammatory role of omega-3 fatty acids.

**Fish Oils.** One of my favorites is northern fish oil, such as cod liver oil, which is rich in EPA and DHA. These omega-3 unsaturated fatty acids become part of the lipid component of the cell membrane. When cyclooxygenase is activated and cleaves off from the cell membrane in the process of producing a lipid message, these omega-3 EFAs lead to the formation of...
an anti-inflammatory message of the PGE 3 category, as opposed to arachidonic acid from other plant and animal sources. Omega-3 fatty acids are found in cold-water fish, which live off of cold water microorganisms like krill, which produce highly unsaturated EFAs to stay liquid at cold temperatures.

To make a true difference requires a shift in diet toward omega-3-rich foods, reduction in arachidonic acid-rich foods, and addition of adequate amounts of EFA-rich oil. Removal of trans-saturated fats in the diet, such as in margarine or in long shelf-life baked goods, is also important. The patient should not oxidize these EFAs with free radicals from sun exposure, smoking, medication biotransformation, or excessive stress. Vitamin E and other antioxidants in the diet protect the unsaturated bonds. Fish oils have been shown to be helpful in atopic dermatitis but not better than corn oil in one study.

Northern fish, living off cold water krill, seem to have the highest concentrations of EFAs. Large carnivorous fish, such as swordfish and tuna, seem to have higher concentrations of mercury and PCBs. Be sure the fish oils have had mercury, PCBs and cholesterol removed, since fish bio-concentrate these substances. Checking with your health department often reveals that pregnant women and children are only permitted to eat them once a month or less. Organized legislative action could reverse this trend over time.

**Philosophy**

Understanding the how-to of herbs, supplements, and vitamins in dermatology goes far beyond what substance treats which conditions. The various conceptual bases by which these supplements are chosen to treat a specific patient with a specific disease have enormous import as a framework for therapeutic decision-making in dermatology and medicine in general. Each framework is based on the etiology of the disease process in that individual as the events leading to and characteristic of the individual and the disease are understood by that system.

Synthesizing various systems and scientific medicine, I strive to understand the events preceding onset or aggravation of a condition which may affect function of the individual’s system in such a way as to bring on the condition. I then treat in the safest way possible to reverse these aggravations in order to reverse the skin condition. Since herbs, vitamins and supplements are closer to foods and spices than drugs, I often choose these to address the probable links in the causative chain leading to disease manifestation. Thus I might use anti-viral or immune supportive herbs to address a skin condition which seems to follow a viral illness. If implications are strong enough and indications are powerful, as in guttate psoriasis, I might choose an antibiotic rather than a supplement.

**Cautions**

My biggest concern with supplements is in patients on multiple medications that have narrow therapeutic ranges of efficacy and toxicity. Interaction by way of altering hepatic metabolism or serum binding could either lower effective concentration below therapeutic range in the case of critical medications, or in other cases, raise the concentration to a toxic level. Consultation of the literature with reference to known interaction as well as which p450 enzymes are utilized, up or down regulated, may help solve this dilemma, in conjunction with feedback from the patient’s internist and an herbalist.

**Expanded Thinking**

A number of plant and animal derived substances that reduce inflammation and oxidative damage have been discussed. Several of these are forms of polyphenols known as bioflavonoids, which each have multiple effects on the skin and other tissues. These products are readily available and can be added to our treatment regimens based on knowledge of both the lore and the basic laboratory data behind them. In some cases, good clinical studies also support their use. For inspiration, we only have to look around to see how our colleagues in the cosmeceutical world have been using these same products in skin creams.

Steps in the pathway toward inflammation or oxidative damage can be altered using these substances, according to our knowledge of how they work from the literature. As we expand our thinking to address the underlying physiology behind each patient’s illness, we will be able to choose both supplements and pharmaceuticals with more efficacy and fewer side effects.