

Scientific Phytonutrition and the Standard American Diet: A Proposed Realistic Solution, Part III

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(Editor's note: This is the third in a three-part series, focusing on organic food; probiotics; plant enzymes and fibers; and herbs, roots and spices. Part I appeared in the June 3, 2002, issue; part II appeared in the September 13, 2002, issue.)

Is Organic Food More Nutritious?

The *Journal of Alternative and Complementary Medicine*¹ reported the results of part of the doctoral dissertation of Virginia Worthington, PhD, of Johns Hopkins University. She found that the nutrient composition of conventionally grown American food has declined dramatically in the past 60 years: for example, 32% less iron, 29% less calcium, and 21% less magnesium. She also found that organically grown produce was higher in most vitamins and minerals, and lower in potentially harmful nitrates. Organic foods had 29% more magnesium, 27% more vitamin C, and 21% more iron. Using the USDA recommendation of at least five servings of fruits and vegetables a day, Dr. Worthington concluded that consuming organic produce could make the difference between a deficient and adequate diet.

The Probiotics: Friendly Microorganisms?

Evidence for probiotics ("friendly" microorganisms such as *L. acidophilus*, *L. bifidum*, *L. bulgaricus*, *B. brevis* and *S. thermophilus*) is impressive.² Inflammatory bowel disease; urinary tract infections; diarrhea; heart disease; and colon cancer risk are favorably affected by these symbiotic bacteria hosted in the alimentary tract. (No wonder we call them "friendly"!)

Probiotics are so effective in inhibiting virally induced gastrointestinal infections in children that hospitals, infamous as vectors for drug-resistant pathogens, are studying their prophylactic use when admitting children.

Of note, one of the ways we get "inoculated" with probiotics is through soil organisms on plants. However, our highly washed, irradiated vegetables may not contain nearly as many as we might get "eating from the garden." Additionally, our frequent ingestion of chlorinated water, antibiotics and other medications, along with low-fiber, high-sugar diets, do not favor the growth of symbiotic microorganisms in the intestines.

Fermented plant foods, such as sauerkraut or tofu, and milk products, such as yogurt, are also important probiotic sources. As dairy sensitivity is so common, especially in those with chronic bowel problems, supplementing with dairy-free probiotics is recommended.

According to Dr. David Williams, editor of *Alternatives For The Health Conscious Individual*, "Friendly bacteria can ... prevent cancerous tumors; inactivate viruses; produce natural antibodies and vitamins; reduce cholesterol ... and even more wonders."

Plant Enzymes: Digestive Dynamos!

Natural plant enzymes, such as amylase, lipase and cellulase, help us to digest starches, fats, cellulose, milk sugar and proteins. Raw food, or any food processed below 108 F, maintains its enzyme activity. Of course, only humans cook their food. In contrast, animals eat a "raw," enzyme-rich diet.

The proposed advantages of a diet rich in raw and low-temperature, processed plant foods, or supplementing these natural plant enzymes, are well-stated in the following quote by I.V. Jimenez-Velasquez, vice-chairman of the department of medicine, University of Puerto Rico School of Medicine:

"As we age, our natural digestive enzymes are depleted, allowing food to ferment (rot) in the digestive tract. Many experts believe that this undigested matter becomes quite toxic, causing many of the health problems associated with aging, such as joint distress, ulcers, bloating and constipation."

Natural Plant Polysaccharides: Soluble and Insoluble Fibers

Three of the healthiest polysaccharide combinations are found in oats, brown rice and apples. These natural plant foods contain high amounts of beneficial soluble and insoluble polysaccharides (fibers) and a wide variety of vitamins and minerals. Insoluble fibers are responsible for increased bulk that reduces the risk of cancer; absorption of sugars in diabetic patients; recurrent urinary stone disease in people with kidney disease; and promotes healthy digestion.

Soluble polysaccharides ("soluble fibers") help reduce cholesterol and lipids, thus reducing the incidence of heart disease. The most effective of these polysaccharides is oat beta-glucan. The FDA has given special status to it, approving its claims.

Rice bran contains 21% fiber, 21% lipids, 13% amino acids, and a variety of vitamins. Most of the fiber is insoluble. It is the richest source of IP-6, a proven anti-colon-cancer nutraceutical. It also is a rich source of tocotrienols, a vitamin-E fraction that has 40 times to 60 times the antioxidant activity of regular vitamin E (alpha tocopherol).

Apple pectin is a soluble fiber that binds to toxins and excess bile and cholesterol in the gut - just one of the reasons "an apple a day keeps the doctor away."

"Soluble fiber from foods such as oat bran, as part of a diet low in saturated fat and cholesterol, may reduce the risk of heart disease," said the FDA in 2001. In allowing this health claim, the FDA concluded that the beta-glucan soluble fiber of whole oats is the primary component responsible for the total and LDL blood cholesterol-lowering effects and increased bile acid secretion that helps in digesting food.

Lecithin

Lecithin is found in almost any tissue of the human body, but is present in greater concentrations in the brain as a component of the myelin sheets that cover nerve cells and other nerve cell membranes. Oral lecithin (phosphatidylcholine) is used to treat dementia and Alzheimer's disease and other disorders of the nervous system in which memory is affected. It has also been shown to decrease total cholesterol while raising HDL ("good" cholesterol) and lowering homocystiene, thus lowering the risk for heart attack, stroke and hardening of the arteries. Furthermore, lecithin promotes healthy liver function, including bile flow, fat breakdown and medication detoxification, and also improves athletic performance.

However, current lecithin and choline consumption rates may be low, especially in certain at-risk

populations, because foods with the highest lecithin concentrations, such as eggs and beef liver, are still considered too high in fat and cholesterol. Granulated lecithin is extracted from soybeans, its highest natural plant source. (Soy lecithin does not contain significant soy protein or protein isolates.)

"We recommend trying lecithin for reducing risk of coronary heart disease, fatty liver, and to improve mild memory impairment," say D.W. Johnson, PhD, and D.J. Mokler, PhD, from the department of physiology and pharmacology, College of Osteopathic Medicine, University of England.

Herbs, Roots and Spices

Medicinal plants have a long tradition in every culture; many are safe when eaten regularly in small amounts with few contraindications, even with concomitant prescription medicines.

Milk thistle is the popular name of a plant of the daisy family native to the Mediterranean region, introduced to most areas of Europe and North and South America. Its scientific name is *Silybum marianum*. The stalk and leaves of this herb have been eaten as an everyday salad vegetable, and used medicinally, for more than 2,000 years! The main uses for milk thistle are to maintain health by stimulating and treating dysfunction of the liver and gallbladder. An extract of the seed has been prepared and investigated in laboratory and clinic trials, particularly as a liver protectant and antioxidant. This extract is known to contain silymarin, which is rich in a mixture of phytochemicals known as flavolignans. A standardized extract of milk thistle, adjusted to between 70% and 80% silymarin, has been used by medical doctors to treat hepatitis, to protect against the toxic effects of poisons, and to detoxify the body after exposure to chemical pollutants such as solvents, paints and glues.

"Milk thistle regenerates healthy liver cells and has an excellent safety profile at therapeutic dosages," states a paper in the *American Journal of Health System Pharmacist*.³ A subsequent report in *Hepatology*⁴ notes that it also "... supports proper liver functioning through a number of mechanisms."

Red beetroot has long been known as a nutritious food, used by herbalists to support kidney and liver functions and to treat coughs and infections. Beetroot is indigenous to Europe and North Africa. Its scientific name is *beta vulgaris*. Scientists have demonstrated that beetroot prevents the addition of fat to the liver in animals. A phytochemical alkaloid known as betaine, in high concentration, appears to be responsible for this effect.⁵

Cinnamon is a plant originally from Sri Lanka and Southeast India. It is used extensively as a condiment, and to treat gastrointestinal disorders. Its scientific name is *Cinnamomum zeylanicum*. Cinnamon alcohol and aldehydes present in the volatile oil give cinnamon its characteristic odor and kill many unfriendly bacteria and fungi that would like to inhabit our intestines. Cinnamon extracts also potentiate the effects of the hormone insulin (Dr. Richard Anderson, Vitamin and Mineral Nutrition Laboratory, Beltsville Human Nutrition Research Center, U.S. Department of Agriculture), which is good news for diabetics, since it safely lowers blood sugar in a moderate way. According to Larry Doss, MD, peer-reviewed medical author and lecturer: "It is a spice that helps equalize (high) blood sugar levels without making them dip too low."

Aloe was called the "plant of immortality" by the ancient Egyptians. A plant originally native to Africa, it is either identified as *aloe vera L* or *aloe barbadensis mill* by botanists. Aloe gel and latex have multiple applications in cosmetics and as medicine. Aloe gel is better known for its wound-

healing properties and as a general tonic, and has been described as a cleanser, antiseptic, nutrient and moisturizer. It also benefits the immune system by fighting viruses while supporting tissue healing, and improving inflammatory disorders, digestion, gastric ulcers and asthma.

Further studies reveal aloe vera inhibits arachidonic acid oxidation *in vitro* by vehicle components.⁶ A controlled clinical trial has been published on the traditional use of aloe gel in treating diabetes. In this study, carried out in India, a significant reduction in blood sugar and triglycerides was observed in the treatment group.⁷

Turmeric rhizome extract. Turmeric is a spice from India and Southeast Asia, long regarded for its medicinal, flavoring and coloring properties. Its use dates back thousands of years: It was listed as an Assyrian herb (circa 600 B.C.), and also by the Greek physician Dioscorides (in the first century). Its scientific name is *Curcuma longa*. Turmeric has a warm, bitter taste and a yellow color, and it is used frequently in the kitchen to flavor or color curry powders, mustards, butters and cheeses. The rhizome, regarded as a stomachic, tonic and blood purifier, is rich in phytochemicals known as diarylheptanoids or curcuminoids. These chemicals have been shown to have antioxidant, lipid-lowering, and anti-inflammatory effects. Some benefits occur even in extremely small doses. In the words of Dr. Ward Dean: "Ramirez-Bosca and her colleagues selected eight subjects with elevated fibrinogen levels and treated them with 20 mg of *Curcuma longa* (turmeric) extract per day. After only 15 days, previously elevated levels of fibrinogen dropped in all eight subjects."⁸

In Conclusion: Super Food Mixes to the Rescue!

We have presented a small sample of the abundant scientific evidence documenting the health-enhancing and disease-preventing benefits of deeply pigmented fruits and vegetables, several medicinal herbs and a few related "super-food" products and extracts. Such overwhelming evidence has caused many of the world's leading researchers, doctors, scientists, universities and governmental agencies to strongly urge the regular and abundant inclusion of these items in our daily diets.

Nonetheless, the simple, sad fact remains that in spite of the subsequent increasing awareness among the general public as to these benefits, only a minority of our population incorporate these foods into their daily diets.

As a result, there is a clear need for a "fast-food, health-food product" that could provide many of the proven benefits of the super foods described in this report, but in a form that supports high compliance by your patient population. A super-food mix, like any fast food, is instant, inexpensive, and most importantly, good tasting, even in plain water. This is important, because to ingest a physiologically significant dose, 9-10 grams of powder must be taken once or twice a day. In pills, this amounts to between 18 and 24 per day, certainly a hindrance to compliance and economy. However, unpleasant-tasting drinks will not be widely and regularly used by the general public, and "hiding" the taste in high glycemic fruit juices is not convenient, economical, or a healthy daily practice for most of us!

Of course, the best thing to do is make the super foods part of the daily diet (eaten in their whole, usually raw form, or fresh-juiced). But let's face it: Do you or your family eat five-to-nine servings - everyday? Then how can you expect your patients to do so? That's unfortunate, considering that getting the super foods into the daily diet is a proven "good-for-you" practice for almost anyone at almost any stage of life.

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