

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

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The More Familiar "Super" Greens: Spinach, Kale and Parsley

The dark-green, leafier vegetables, such as spinach, kale and parsley, are also abundant in vitamins, minerals, and carotenes. Of particular note are folic acid (vitamin B₉); vitamin K; calcium; iron; potassium; and the antioxidants lutein and zeaxanthin. These vegetables are also rich in chlorophyll, the great detoxifier, which is why parsley and chlorophyll are used in natural breath fresheners.

Based on the USDA, folic acid is the most common dietary deficiency in the U.S. (three out of four diets). Only recently have we become aware that folic acid deficiency is the usual cause of common neural-tube birth defects. And many medications, including birth control pills and estrogen, increase the need for folic acid.¹

Green, leafy vegetables are high in bone-building calcium, but did you know that vitamin K is needed for strong bones, too? The Farmingham study showed that those with the highest vitamin K intake had three times fewer hip fractures from osteoporosis.² In Japan, vitamin K is approved as a drug to treat osteoporosis. A recent analysis of published research on vitamin K concluded: "A substantial part of the population is mildly deficient in vitamin K, and at the later stages this deficiency may contribute to increased bone fracture risk, arterial calcification and cardiovascular disease."³

Popeye sang, "I'm strong to the finish 'cause I eats me spinach." This was thought to be related to spinach's rich iron content which is also a characteristic of kale and parsley. With high amounts of sodium, protein and processed food, we are highly in need of alkaline ash minerals, especially potassium, so predominate in super greens. These minerals act as a buffer to neutralize excess acid. If not present in sufficient quantities, the body steals these much-needed buffers from our bones, and thus, such deficiencies are thought to be a leading cause of osteoporosis.⁴

The discovery of a class of micronutrients, phytonutrients, which are not vitamins, minerals or fiber (but with a dynamic health-enhancing effect), is largely why major health agencies recommend a minimum of five different fruits and vegetables daily. One such class of phytonutrients is the antioxidant carotene, of which the pro-vitamin-A betacarotene is the most familiar. However, though the dark green, leafy vegetables are a rich source of betacarotene, there are numerous nonvitamin-A carotenes also found in these foods. Two of the most researched are lutein and zeaxanthin. According to *Health Sense*,⁵ numerous studies show that maintaining sufficient levels of these, the only carotene antioxidants active in the retina of the eye, can prevent macular degeneration and cataracts (two leading causes of age-related blindness), and preserve youthful visual sensitivity.

High consumption of green, leafy vegetables, containing lutein and zeaxanthin, was determined to explain the low incidence of lung cancer in Fiji, where 80 percent of the men smoke!⁶ The February 2000 edition of the *American Journal of Clinical Nutrition* linked lutein to a 17-percent reduction in colon cancer risk.

Non-Green "Super" Carotenoids: Carrots and Tomatoes

There are two more carotenoid super foods worth mentioning: carrots and tomatoes.

Carrots are well-known for their pro-vitamin-A beta-carotene content, the abundance of which is responsible for the bright orange color. "There was an evident increase in the risk of breast cancer for decreasing amounts of betacarotene ... the risk of breast cancer approximately doubled among the subjects with blood levels of betacarotene at the lowest quartile," said the *American Journal of Epidemiology*.⁷

Tomatoes turn bright red because of lycopene pigment. Lycopene has drawn attention because of its link in lowering the risk of lung and prostate cancer.⁸ Food items most strongly related to a decreased risk for ovarian cancer were raw carrots and tomato sauce. According to the *International Journal of Cancer*,⁹ consumption of fruits, vegetables, food items and supplements high in carotene and lycopene may also reduce the risk of ovarian cancer.

Cruciferous Vegetables

When it comes to fighting cancer, the real champs may be the cruciferous vegetables. These contain detoxifying phytonutrients with isothiocyanate, sulphoraphane and indole-3 carbinol. These plant micronutrients work by speeding up the production of enzymes, especially in the liver, with which bodies convert toxic, mutagenic, cancer-causing substances into less harmful, even beneficial substances.¹⁰

The *Journal of the National Cancer Institute* proclaimed that the cruciferous vegetables, such as broccoli, cauliflower, cabbage and Brussels sprouts, substantially lower the risk of prostate cancer in men. Numerous studies also suggest a protective role in uterine, cervical and breast cancer in women.¹¹

Fruit: Berry, Berry Good for You!

A recent *Newsweek* article noted: "The day when doctors say, 'Take 10 cherries and call me in the morning' may not be far off."

Most known phytonutrients are strongly related to pigmentation. Just as phytonutrient antioxidant carotenoids tend to dominate in dark-green, bright-red and orange vegetables, the richly red or blue-pigmented flavonoids (isoflavones, anthocyanins, flavinols, catechins and phenols) tend to be dominant in fruits and herbs. The richest source of pigment and antioxidants in fruits is blueberries, raspberries, tart dark cherries, and deep-purple plums or prunes. These fruits are the most potent source of anti-aging antioxidants of any commonly eaten foods.

Antioxidants have been shown to increase immune function and decrease the risk of infection and cancer. Antioxidants help by preventing or repairing damage done to the body's cells by free radicals. Simply put, a free radical is a molecule with a free electron. Electrons tend to group in pairs. Antioxidants such as vitamins C, E or beta-carotene may donate one of their electrons to the free radical. If no antioxidants are present, a free radical takes an electron from vital cell

structures, damaging cells, eventually leading to disease.

Flavonoid antioxidants in berries, cherries and plums eat up free radicals in the bloodstream, helping prevent the development of cancer. These flavonoids have even been called, "Mother Nature's all-natural chemotherapy agents." Fruit phytonutrient flavonoids also play a role in preventing the development of heart disease, by discouraging fatty deposits in the arteries. Flavonoids even slow wrinkling, protect the eyes from cataracts and macular degeneration, and protect the aging brain. Fruits and vegetables truly are nature's anti-aging wonders.

Most scientists believe it is far better to get a daily healthy dose of dozens of different phytonutrients from micronutrient-dense super foods than it is to take a megadose of antioxidant vitamins and minerals. For example, the 17 identified compounds in tart cherries that have antioxidant properties are considered superior to the activity of vitamins E and C; they also contain compounds that help relieve the pain of arthritis, gout and headaches.

Blueberries are by far the greatest common, whole-food source of vision and brain-protecting antioxidant flavonoid (anthocyanin). Cranberries, raspberries and tart cherries are the richest fruit sources of ellagic acid, a naturally occurring plant phenolic flavonoid phytonutrient known as a potent anticarcinogenic compound. Clinical tests conducted at the Hollings Cancer Institute at the Medical University of South Carolina show that ellagic acid may be the most potent way to prevent cancer. In addition, all berries, not just cranberries, help prevent recurrent urinary tract bladder infections.

Four More Fabulous Flavonoids: OPCs, Quercetin, Green Tea and Red Wine

Oligomeric proanthocyanidins (OPC) are extremely rich in the anthocyanin bioflavonoid group of phytonutrients. Found abundantly in berries, the richest sources are grape seed and pine bark extracts. These have been shown to be powerful antioxidants significantly more active than vitamins C and E), and are thought to protect against carcinogenic changes.¹²

Quercetin is the major representative of the antioxidant flavinol group, which is particularly known for preventing the oxidation of low-density lipoproteins ("bad" cholesterol). Quercetin is found in fruits and vegetables, most notably onions and green apples. That is the major reason why onions and green apples help prevent hardening of the arteries and the heart attacks and strokes that arteriosclerosis causes.¹³ Quercetin has also consistently demonstrated to have a potent anti-tumor effect.¹⁴

Green tea is rich in antioxidant polyphenols, its most active ingredient. Green tea is purported to help prevent cancer, heart disease, gum disease - even tooth decay. The benefits of green-tea-flavonoid catechins for the heart are greater than those of red wine, without the alcohol. (There is a 10-percent increase in breast cancer for every alcoholic beverage consumed on a daily basis.)¹⁵

Red wines are more protective against heart disease than white wines because of the phytochemical, resveratrol, which gives dark grapes their deep red/blue hue. *Science* reports: "Resveratrol (a stilbene found in grape skin extracts) is able to inhibit the initiation and promotion of tumors, and cause pre-cancerous cells to return to normal."¹⁶ By extracting the resveratrol as a supplement, one can get the antioxidant, immune enhancing and heart-protecting benefits of red wine, dark grapes and grape juice without all the alcohol and sugar.

Fruit and Vegetable Extracts

To approximate the health benefits of eating five to nine servings of dark- green, red, orange, blue and purple fruit and vegetables daily, food scientists have created extracts from the most nutrient 38th annual meeting of the American Society of Cell Biology show us that these supplements enhanced "multiple immune functions, especially for people whose immune functions have been diminished." Dr. Kim O'Neill, of Brigham Young University's microbiology department, was quoted as saying, "Fruit and vegetable extracts may be protective against cancer."

Editor's note: Part III will introduce the "fabulous flavonoids".

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