Nutritional Supplements for Optimum Health

By Donald W. Miller, Jr., M.D.

Updated April 13, 2009

Nutritional supplements help us maintain optimum health, along with a good diet, daily exercise, avoiding stress, and getting a good night's sleep. There is growing evidence that nutritional supplements—vitamins, minerals, amino acids, fatty acid nutrients, herbal and botanical products, and various other natural compounds like coenzyme Q10 and alpha lipoic acid—have specific health benefits. Taken in the right doses these unpatentable natural medicinal products (i.e., nutraceuticals) can prevent cancer, heart disease, neurodegenerative diseases, and, among other things, prevent loss of vision from macular degeneration and cataracts.

These are the supplements that I take, along with their doses and a brief explanation of each one's benefits:

The Top Ten:

Vitamin D3 – 5,000 IU/day

Called the "master key to optimum health," vitamin D controls the expression of more than 1,000 genes throughout the body, notably in the immune system, in endothelial cells lining blood vessels, pancreatic beta cells, and brain neurons. Genes that vitamin D express prevent influenza and treat tuberculosis, strengthen muscles, prevent common cancers (and possibly suppress metastasizes), and prevent autoimmune diseases. Vitamin D also expresses genes that blunt the immune system-mediated inflammatory response that propagates atherosclerosis and congestive heart failure. For most people the dose needed to reach an optimal vitamin D blood level (25-hydroxyvitamin D) of 50 ng/ml is 5,000 IU/day, ten times the government's recommended dietary allowance (RDA). People with cancer, chronic illness, and neurodegenerative diseases should take sufficient vitamin D to attain a level of 80 ng/ml (which requires 8,000-10,000 IU/day). See my article "Vitamin D in a New Light."

Iodine – 12.5 mg/day (two drops of 5% Lugol's solution or one Iodoral tablet)

Iodine taken in doses 100 times the RDA (100-150 micrograms/day) has important extrathyroidal benefits. These include its role as an antioxidant, in preventing and treating fibrocystic disease of the breast, and in preventing and treating cancer. In the right dose, iodine helps keep the immune system healthy, and it provides antiseptic mucosal defense in the mouth, stomach, and vagina. People who take iodine in milligram doses say that they feel healthier, have a sense of well being and increased energy. See my article "Iodine for Health."

Selenium – 200 mcg/day, as selenomethionine

Bound to cysteine in place of sulfur and called the "21st amino acid," selenocysteine is the active site in some 35 proteins. Glutathione peroxidase, which contains four selenium atoms, plays a major role in free radical defense. Plasma selenoprotein P protects endothelial cells against damage, and epithelial selenoprotein protects prostratic secretory cells from developing carcinoma. People deficient in selenium have an increased risk of cancer. Selenium prevents cancer through a variety of mechanisms, which include antioxidant protection, enhanced immune surveillance, suppression of angiogenesis, regulation of cell proliferation, enhancement of apoptosis (cell death), and inhibition of tumor cell invasion. See my article on selenium titled "The Moon Goddess' Role in Human Health."

Vitamin K2 – 90 mcg/day, as menaquinone-7

Vitamin K comes in two basic forms, K1 and K2. K1 is a cofactor for blood coagulation. K2 activates osteocalcin, a protein secreted by osteoblasts that plays a role in bone mineralization and calcium ion hemostasis. Calcium deposits in the walls of blood vessels play an active role in the formation of atherosclerosis. K2 activates a protein called matrix Gla (carboxyglutamic acid) protein. It carboxylates the glutamate residues in matrix Gla protein, which enables it to bind and remove calcium from blood vessels and thus prevent the formation atherosclerotic calcific plaques. Vitamins D and K2 work together in this regard because vitamin D expresses the gene that makes matrix Gla protein. Menaquinone-7, the natural form of vitamin K2, is better than synthetic menaquinone-4, the more widely marketed form of vitamin K2.

Magnesium (Mg) – 450 mg/day, as Mg citramate

Magnesium ions are essential to the basic nucleic acid chemistry of life, and 80 percent of the enzymes in the body need Mg in order to function. Mg deficiency can affect every organ system in the body. In skeletal muscles, Mg deficiency causes twitches, cramps, back aches, neck pain, tension headaches. With the heart Mg deficiency can cause angina (from spasm of the coronary arteries), high blood pressure, and rhythm disturbances, including sudden death.

Alpha Lipoic Acid (ALA) – 300 mg/day

Sporting a sulfur-hydrogen (sulfhydryl) group and being soluble in both fat and water, ALA is one of the most powerful antioxidants in the body and a critical nutraceutical. In addition to its own work as an antioxidant, ALA restores the four other network antioxidants when oxidized (vitamin C, vitamin E, coenzyme Q10, and glutathione) back to their functional, reduced antioxidant state. ALA aids glucose entry into cells, improves insulin sensitivity, and reduces the risk of diabetes. It protects brain cells by blocking excitotoxicity, chelates (removes) mercury from the body, and reduces the risk of atherosclerosis. ALA also plays an integral role in producing the energy molecule adenosine triphosphate (ATP), feeding pyruvate from the glycolytic cycle into the Krebs cycle.

Coenzyme Q10 (CoQ10) – 100 mg/day

CoQ10 is a vitamin-like compound. The body synthesizes it, but in insufficient quantities, especially in people who take statins like Lipitor to lower cholesterol. It is a strong antioxidant and removes oxidized low-density lipoproteins (LDL), a leading culprit in atherosclerosis. CoQ10 also plays a critical role in mitochondrial energy production. It is a necessary ingredient in the electron transport chain that produces ATP through oxidative phosphorylation. A central event in chronic degenerative diseases is the loss of a cell's ability to produce sufficient energy. The hearts in people with congestive heart failure, and the brains in those with Parkinson's disease lack CoQ10. High doses of this supplement (800-1,200 mg/day) effectively treat these diseases. Even in these doses CoQ10 has no side effects or toxicity.

L-Carnitine – 660 mg/day

Fats supply most of the fuel that heart muscle cells use, and this compound is needed for cells to metabolize fats. L-carnitine transports long chain fatty acids, which, by weight, have a double concentration of calories (compared with carbohydrates and proteins) into mitochondria, where they are converted into ATP. As is the case with CoQ10, people with congestive heart failure also have low levels of L-carnitine in their heart muscle cells.

Omega 3 fatty acids:

EPA eicosapentaenoic acid) – 850-1080 mg/day (in 2 tsp Quantum Cod Liver Oil)
DHA (docosahexaenoic acid) –1,050 mg/day (in 2 tsp Quantum Cod Liver Oil)

These two essential, Omega-3 fatty acids promote cognitive and neurological health, and they prevent heart disease and cancer. DHA influences brain cell signaling, receptor expression and function, and neurotransmitters. It stimulates neurite outgrowth and synaptic development and repair (brain plasticity). EPA thins the blood. Both regulate the expression of many genes involving antioxidant capacity and oxidative stress response, others that control cell signaling and proliferation, and genes that produce chemicals which reduce inflammation and improve blood flow through the coronary arteries and other blood vessels.

I mix the two teaspoons of cod liver oil in two ounces Limu Plus (see below), which tastes good.

Resveratrol – 100 mg/day, as Longevinex

This anti-aging agent, found in red grapes, extends the life span of yeast (by 70%), roundworms, fruit flies, and mammals (as seen in studies done with mice). Resveratrol controls the expression of more than 100 genes, including Sirtuin 1, the DNA-repair "survival" gene. Notably among its effects, resveratrol is a potent antioxidant, an anti-inflammatory agent (COX-inhibitor), liver detoxifier, brain plaque cleanser, and mineral chelator. It also normalizes blood sugar.

The cost of taking these ten supplements purchased online (see below) is $4.45 a day, less than the cost of a Starbucks double mocha latté. Taken together, they can substantially reduce the risk of getting cancer, heart disease, and neurodegenerative disorders with aging, such as Alzheimer's dementia, amyotrophic lateral sclerosis, and Parkinson's disease.

To ensure optimum health I take these inexpensive nutraceuticals rather than prescription drugs like Lipitor or other statins, designed to halt coronary atherosclerosis, and Fosomax, for osteoporosis.

I obtain the requisite Omega 3 EPA and DHA by taking 2 teaspoons a day of high-vitamin Quantum cod liver oil (Blue Ice cod liver oil is equally good), which also has 23,000 IU of vitamin A along with 2,300 IU of vitamin D. The vitamin D present renders this dose of oil-based vitamin A completely safe and non-toxic. (See here and here.) Instead of cod liver oil, other preparations of EPA and DHA (in capsule form) are suitable substitutes.

In addition to these ten essential nutraceuticals one should also take a broad spectrum multivitamin-mineral supplement. Better yet, I take these:

Other Nutritional Supplements I Take

Vitamins:

Fat-soluble vitamins (in addition to vitamins D and K above):

A – 23,000 IU/day, oil-based, in Quantum Cod Liver Oil

Vitamin A helps protect the mucous membranes of the mouth, nose, throat, gastrointestinal tract, and lungs by promoting mucin secretion and microvilli formation. It is an essential nutrient for the eyes, skin, and immune system. The hormonally active form of vitamin A, 9-*cis*-retinoic acid, is essential for the full functioning of vitamin D (without it, activated vitamin D binds weakly to its receptors on DNA, resulting in a reduced effect on gene expression). Water-miscible, emulsified, and solid forms of retinol (vitamin A) supplements are ten times more toxic than oil-based preparations like that in cod liver and should be taken in a considerably lower dose. (See this study in Am J Clin Nutr 2003;78:1152-9.)

E – 400 IU/day, in "Unique E," which contains natural d-alpha tocopherol and a proprietary blend of d-gamma tocopherol, d-delta tocopherol and d-beta tocopherol. (23 cents/day)

Functioning as an antioxidant, vitamin E, protects cell membranes by extinguishing various singlet oxygen and polyunsaturated fatty acid radicals. And like vitamins D and A, vitamin E also acts as a hormone in regulating gene expression. Natural d-alpha tocopherol works better than synthetic dl-alpha tocopherol, the most common form of vitamin E in multivitamin supplements. The natural form makes platelets less sticky, whereas platelets cannot absorb the synthetic kind. There are seven other forms of vitamin E—three tocopherols and four tocotrienols. Gamma tocopherol neutralizes free radicals that the alpha form cannot douse; and studies show that it, in particular, lowers the risk of prostate and colon cancer.

Water-soluble vitamins:

B1 (thiamine), *B2* (riboflavin), *B3* (niacin, as niacinamide), *B5* (pantothenic acid), *B6* (pyridoxine), *B7* (biotin) – each 50 mg/day, in "B Complex 50" (8 cents/day)

Cells depend on these B vitamins for energy production and cell maintenance. *Thiamine* plays an essential metabolic role in carbohydrate and protein metabolism and in neural function. *Riboflavin* plays a key role in energy metabolism of fats, carbohydrates, and proteins. Niacinamide, the functional vitamin form of *niacin*, is a precursor for electron-carrying coenzymes involved in cellular respiration. It is also involved in DNA repair and the production of steroid hormones in the adrenal gland. Animal studies show that niacinamide protects against Alzheimer's dementia and Parkinson's disease, and it produces dramatic improvements in cognitive brain function after head injuries and stroke. *Pantothenic acid* is a cofactor necessary for forming coenzyme-A, a compound that plays pivotal role in the synthesis and oxidation of fatty acids, and the oxidation of pyruvate in the citric acid cycle (the process during aerobic respiration that generates biochemical energy). *Biotin* is necessary for cell growth, production of fatty acids, and metabolism of fats and amino acids; and it also plays a role in the citric acid cycle. During times of stress these critical water-soluble vitamins become quickly depleted.

B9 (folic acid) 400 mcg/day, in "B Complex 50"

Folic acid repairs DNA. Without folic acid, breaks in DNA, like that which occurs when a person is exposed to ionizing radiation, remain unrepaired. Along with vitamins B6 and B12, folic acid is a cofactor in the metabolism of methionine. When any one of these three vitamins is deficient, blood and tissue levels of homocysteine rise. Elevated homocysteine blood levels increase the risk of stroke, a heart attack, and peripheral vascular disease; and it is associated with a greater incidence of Alzheimer's disease.

B12 (methylcobalamin) 1,000 mcg/day sublingual (13 cents/day)

Along with folic acid, cobalt-containing vitamin B12 is essential for the formation of the nervous system's intricate patterns and plays a key role in brain function and in maintaining a healthy nervous system. This vitamin is required for synthesis of DNA during cell division and is especially important in tissues where cells divide rapidly, particularly the bone marrow, which produces red blood cells a 50-day half-life.

C (buffered) – 1,000 mg/day (7 cents/day)

In addition to its role as an antioxidant, vitamin C is an essential cofactor for protein synthesis, particularly for collagen, the structural component of connective tissue (bone, teeth, cartilage, ligaments, skin, and blood vessels). Collagen makes up 25 percent of the proteins in the body. In its role as an electron donor, vitamin C transfers electrons to iron. Iron in enzymes that make collagen transfers its vitamin C-supplied electron to oxygen, thereby enabling it to combine with hydrogen as a hydroxyl (-OH) group. Hydroxyl groups attach to the amino acids in collagen, forming cross links that give this protein its tensile strength.

Minerals (along with magnesium in the top-ten supplement list)**:**

Calcium – 370 mg/day, from 2 capsules(1,000 mg)/day of "Coral Calcium" (5 cents/day)

In its ionic form, calcium functions as a signal for cellular processes and is the major material used in mineralization of bones and teeth. Taking calcium as a nutritional supplement avoids ever having a deficiency of this element. It helps keep one's bones strong and helps prevent colorectal cancer.

Potassium – 2.1 gm/day, from 4 capsules (5.4 gm) of potassium bicarbonate, taken on a empty stomach washed down with a full glass of water (33 cents/day)

The potassium content of the average American diet is quite low, 60-80 mEq (4.4 gm)/day, compared to our Paleolithic ancestors, who consumed 400 ± 125 mEq/day. Among its many benefits, potassium reduces blood pressure (see here), increases muscle mass (by deceasing urinary nitrogen excretion), decreases bone loss (by reducing urinary calcium excretion), reduces the risk of stroke (see here), reduces dietary acid load, and improves endothelial function.

Strontium – 680 mg/day, as strontium citrate (2 capsules), taken alone on an empty stomach and not with other minerals, especially calcium (which impairs its absorption) (36 cents/day)

On the recommendation of my physician, Dr. Jonathan Wright, I have started taking strontium to help keep my bones strong and prevent osteoporosis. Like calcium, its smaller cousin, strontium has two positive charges in its ionic form. Animal and human studies show that it increases bone density and the rate of bone formation and decreases the rate of bone resorption. In a randomized, placebo-

controlled trial published in the *New England Journal of Medicine*, osteoporotic postmenopausal women taking 680 mg of strontium a day had fewer fractures. Strontium also reduces the incidence of dental cavities and has a cartilage-growth-promoting effect that could help people who suffer from arthritis. A review of the health benefits of strontium is here.

Zinc – 30 mg/day (13 cents/day)

Zinc is a constituent of more than 3,000 different proteins in the body. Like calcium, cells employ zinc to serve as a signal for cellular processes, notably in salivary glands, intestine, the immune system, and prostate gland. Zinc deficiency leads to poor night vision, a decrease in sense of taste and smell, reduced ability to fight infections, and poor wound healing.

The (Five) **Network Antioxidants** (along with vitamin C, vitamin E, alpha lipoic acid, and coenzyme Q10 above—see *The Antioxidant Miracle* by Lester Packer and Carol Colman)

Idebenone – 90 mg/day (61 cents/day)

On the recommendation of Dr. Russell Blaylock, I take this synthetic form of CoQ10 in addition to CoQ10 itself. Idebenone is more easily absorbed by the brain than is CoQ10. It protects neurons from free radical damage and other adverse excitotoxic effects.

N-Acetyl-Cysteine (NAC) – 500 mg/day, a component of *Glutathione* (24 cents/day)

The two major sulfur-containing compounds (thiols) in the five-fold antioxidant network are alpha lipoic acid and glutathione. Called the "master antioxidant," glutathione regulates the actions of other antioxidants in the body, notably vitamins C and E and various bioflavonoids (water-soluble plant pigments). Glutathione also plays an important role in DNA and protein synthesis and repair, and the amount of glutathione in one's cells predicts how long he or she will live. Glutathione is poorly absorbed and does not cross the blood-brain barrier. NAC, which is readily absorbable, provides the scarce sulfur-containing amino acid cysteine required for synthesis of glutathione. The two other amino acids in glutathione, glycine and glutamic acid, are abundant in food and cells).

Another Carnitine

Acetyl-L-Carnitine –1,000 mg/day (24 cents/day)

Like idebenone with regard to CoQ10, this form of carnitine is better absorbed by the brain than L-carnitine. It increases cell energy, and the acetyl component is an important neurotransmitter. Acetyl-L-carnitine helps prevent and treat Alzheimer's dementia, amyotrophic lateral sclerosis (ALS), and Parkinson's disease.

Amino Acids

Carnosine – 200 mg (24 cents/day)

A water-soluble antioxidant that protects cell membranes, regulates calcium metabolism in heart muscle cells, and has other important wound healing and anti-aging properties.

Arginine – 2,000 mg/day (2 capsules twice a day) as "Perfusia-SR" ($1.10/day)

Arginine fosters heart and blood vessel health. It improves production of nitric oxide by vascular smooth muscle cells, causing blood vessels to relax and have improved blood flow; and it decreases platelet adhesiveness, rendering them less sticky, which further enhances blood flow. This amino acid also bolsters the endocrine system, enhances immunocompetence, and hastens wound healing.

One Omega-6 Fatty Acid

Conjugated Linoleic Acid – 2,000 mg/day (34 cents/day)

Vegetable oils—corn, cottonseed, canola, sunflower, safflower, and soybean oils—contain Omega-6 fatty acids. Although Omega-6 fatty acids, like their Omega-3 cousins, are essential, Americans consume far too many of them. The ideal ratio for Omega-6/Omega-3 fatty acid consumption is 1:1 up to 4:1. The average American, however, consumes Omega 6 fatty acids in a 50:1 ratio! In this amount, these polyunsaturated plant fats cause inflammation, which is the underlying cause of a number of chronic diseases, including atherosclerosis. They also cause cancer (see here and here). But conjugated linoleic acid, in eggs and animal fat (not in vegetable oils), is the only Omega-6 fatty acid that is worth

taking as a supplement. Conjugated linoleic acid reduces body fat and, among its anticancer benefits, suppresses breast and colon cancer.

Botanicals

Ginkgo Biloba – 240 mg/day (10 cents/day)

Extracted from the 200 million-year-old maidenhair tree (the oldest living tree species on earth), ginkgo biloba thins the blood and decreases platelet adhesiveness like aspirin, but without its side effects. It increases blood flow through the body, especially in the heart and brain. Ginko biloba improves mental functioning and memory in older people and may well exert a protective effect against developing Alzheimer's dementia and Parkinson's disease. I think one's health is better served by taking 240mg of ginkgo biloba a day rather than aspirin. (A careful look at the evidence shows that the adverse effects of long-term aspirin outweigh its small potential benefit for prevention of heart disease and stroke.)

Pycnogenol – 120 mg/day (38 cents/day)

Pycnogenol comes from the bark of the French maritime pine tree and is a blend of bioflavenoids that have health-enhancing effects. It increases nitric oxide in the walls of blood vessels, which is the mechanism for having an erection, and, along with arginine, has been called "a poor man's Viagra," without Viagra's side effects. Pycnogenol is a powerful antioxidant that works well with ginkgo biloba and vitamin E. It reduces platelet clumping and blood-clot formation and protects against deep venous thrombosis and pulmonary embolism. It also protects against stroke and neurodegenerative diseases.

Silymarin (milk thistle) – 300 mg/day (38 cents/day)

Milk thistle comes from flowering plants whose leaves are mottled with splashes of white and contain a milky sap. For 2,000 years herbalists have used the seeds of milk thistle to protect the liver against toxins and to treat chronic liver disease. The active compound in milk thistle, silymarin, is a mixture of four closely related bioflavonoids. Silymarin lowers insulin resistance, slows the growth of cancer cells, and exhibits antiviral activity.

Aged Garlic Extract – 600 mg/day (6 cents/day)

Aged Garlic Extract (AGE) is a concentrated form of organic garlic. It is odorless and richer in antioxidants than the fresh bulb. AGE helps prevent atherosclerosis, heighten immunity, and prevent and treat cancer and neurodegenerative diseases. It also has anti-aging effects in improving memory, learning, and endurance.

Lycopene – 10 mg/day (5 cents/day)

This red carotenoid in tomatoes is an antioxidant that may slow skin aging and prevent certain types of cancer, particularly prostate cancer. It also arrests benign prostatic hypertrophy.

Mushroom Blend – "RM-10," 2 capsules/day (39 cents/day)

For many years, folk and traditional Chinese medicine has used mushrooms and fungi to strengthen the immune system to fight infections and cancer, and to suppress the immune system when it becomes overactive and causes allergies and autoimmune disease. The RM-10 mushroom blend contains Cordyceps, Reishi, Shiitake, Tremella, and Maitake, among others. It functions like a vitamin pill for the immune system and contains a maintenance dose of beta glucan, which activates macrophages, the first line of defense in the innate immune system.

Vinpocetine – 20 mg/day (21 cents/day)

Vinpocetine is an extract from the periwinkle plant that boosts cognition and improves memory. Vinpocetine's neuroprotective action is derived from its ability to improve cerebral blood flow, enhance brain cell electrical conductivity, and protect against damage caused by excessive intra-cellular release of calcium and glutamate-induced excitotoxicity. Vinpocetine prevents cognitive deficits related to normal aging.

Chlorella – 1000 mg/day (7 cents/day)

Chlorella is a microscopic algae known for its ability to detoxify heavy metals—mercury, cadmium, lead—from the body. It stimulates the immune system and with its high chlorophyll content, counteracts bad breath (and foul smelling stools).

IP-6 (myo-inositol hexaphosphate) – 800 mg/day (12 cents/day)

IP-6 stimulates cellular immunity and chelates iron, depriving bacteria and cancer cells of this element, which they need to grow. IP-6 also inhibits vascular calcification.

Curcumin – 500 mg/day (29 cents/day)

Curcumin is the orange-yellow curry spice that comes from turmeric root. It is an antioxidant and has antiproliferative and pro-apoptotic effects on cancer cells, especially melanoma. It suppresses inflammation by down regulating NFκB activity and blocking eicosanoid synthesis of inflammatory leukotrienes, prostaglandins, and thromboxanes derived from arachidonic acid.

Quercitin – 250 mg/day (33 cents/day)

Quercetin prevents oxidation of LDL cholesterol in blood vessel walls, an inciting factor in atherosclerosis. This bioflavenoid, like curcumin, has anti-inflammatory properties. It inhibits the delta-5-lipooxygenase enzyme, which initiates the production of inflammatory eicosanods. It also inhibits tumor initiation and growth.

Grapefruit seed extract – 125 mg/day (29 cents/day)

Grapefruit seed extract is said to possess anti-bacterial, anti-viral, and anti-fungal properties.

Horsetail (equisetium) – 440 mg/day (3 cents/day)

This herbal remedy is rich in silica and silcic acids, which help form collagen. Naturopathic physicians use horsetail as a supplement to prevent and treat osteoporsis.

Hesperidin – 250 mg/day (22 cents/day)

Hesperidin, found in lemons and oranges, improves the health of capillaries by reducing capillary permeability. It helps halt premature aging and degenerative diseases.

Saw Palmetto – 450 mg/day (4 cents/day)

For men, this extract of the fruit *Serenoa repens* has shown promise in preventing and treating benign prostatic hyperplasia.

Goldenseal – 470 mg/day (9 cents/day)

This herb has antibacterial and immune-enhancing properties and may also have cardiovascular benefits.

Stinging Nettle – 300 mg/day (3 cents/day)

This herb has a long tradition of use as an adjuvant treatment of arthritis. It contains compounds that reduce inflammatory cytokines.

Probiotics

Theralac – one tablet/three times a week, containing *Lactobacillus acidophilus* (5 billion CFU), *L. paracasei* (5 B CFU), *L. rhamnosus* (2 B); *Bifidobacterium lactis* (5 B), *B. bifidum* (3 B)—total of 20 billion colony forming units (64 cents/day)

Beneficial probiotic bacteria help us digest and absorb our food, keep the immune system functioning properly and play a role in generating vitamin B-12. They prevent food allergies, help repair the gut lining, suppress bad bacteria, and help metabolize hormones. Abnormal metabolism of estrogen can produce compounds that may cause breast cancer, and women with low numbers of probiotic organism in their colon have been found to be at a higher risk for breast cancer.

Fucoidan (in Limu Moui) **and** (Russian) **Adaptogens**

Limu Plus – 3 ounces/day ($3.60/day)

Fucoidan, in brown seaweed, is a complex carbohydrate (sulfated polysaccharide). Fucoidan enhances immunity and has other important health benefits. This compound causes cancer cells to self destruct—researchers have shown that fucoidan induces apoptosis in human lymphoma cell lines. Fucoidan stimulates the immune system's natural killer cells, which destroy tumor cells and cells infected with

viruses. It prevents white blood cells from sticking to the walls of blood vessels, which starts the process of atherosclerosis. Fucoidan also inhibits smooth muscle cell proliferation with neointimal hyperplasia, which causes arterial blockage after placement of stents in heart patients. In one animal study fucoidan prevented neointimal hyperplasia and in-stent restenosis of stents placed in the iliac arteries of rabbits.

Limu (the Hawaiian word for algae) Moui is a nice tasting extract of brown seaweed that contains fucoidan. Limu Plus is Limu Moui with ten adaptogens, which includes Rhodiola Rosea.

Adaptogens are herbal products
said to increase the body's resistance to stress, anxiety, and fatigue. Herbalists claim that natural adaptogenic herbs, identified and researched by Russian scientists, are distinct from other substances in their ability to balance endocrine hormones and the immune system, helping the body to maintain optimal homeostasis.

Lithium

Lithium Orotate – 240 mg/day, containing 10 mg of elemental lithium (22 cents/day)

Lithium is an alkali metal in the same family as sodium and potassium. In low doses (much less than those used to treat depression), lithium has anti-aging effects. It protects brain cells from damage from excitotoxins like glutamate, inhibits beta-amlyloid secretion (a hallmark of Alzheimer's disease), and increases human brain grey matter, among other things. Lithium makes uric acid more soluble so it doesn't crystallize into painful "needles" and cause gout. And it inhibits reproduction of viruses—herpes simplex, adenovirus (cold), and measles viruses.

Amygdalin (Laetrile, "vitamin B17") – 100mg/day (23 cents/day)

Found in apricot pits, amygdalin prevents and can treat cancer by this method: An enzyme found in cancerous cells, glucuronidase, breaks amygdalin down into cyanide (and several other non-toxic components). The cyanide thus released kills aberrant, cancerous cells.

Melatonin

Melatonin – 6 mg/day, before bedtime (the dose for people over age 50) (41 cents/day)

In addition to synchronizing the body's internal clock and inducing sound sleep, this hormone, produced in the pineal gland, enhances cognitive function and has a positive influence on mood and behavior. Melatonin also helps regulate insulin and kills cancer cells. In mouse studies, melatonin reverses 13 of the 25 genes that are altered with aging. (It also triggers puberty in adolescence.)

At a cost of $12.00 a day, I think taking these additional 36 nutraceuticals is a good investment for maintaining optimal health. This is health care in the true sense of the term, care that can help one live a long life free of disease. Unfortunately, the term "health care" as it is used today does not mean caring for one's health. It signifies treating and managing illness. The government's Medicare and Medicaid programs defray the cost of treating diseases that its beneficiaries get. Like private insurance plans, these government programs pay for sickness care. Today in the U.S. "health care" is a $2 trillion pharmaceutically oriented sickness industry, devoted primarily to treating symptoms of disease that requires continued use of prescription medications. Insurers do not pay for nutritional supplements to keep a person healthy.

Six thousand people die each day in the U.S., most of them from preventable diseases. The two leading causes of death are coronary heart disease and cancer, which accounts for more than half of these daily deaths. (In contrast, each day 125 people in the U.S. die in automobile accidents and 60 are murdered.) Taking vitamin D, iodine, and selenium alone could well prevent 80 percent of the cancers that afflict Americans.

In order to achieve the maximum benefit from nutritional supplements, one needs to eat right. One should do this: Avoid aspartame (in diet sodas), avoid high fructose corn syrup used to sweeten many foods (baked goods and condiments) and beverages (soda pop), stay away from the excitotoxin

monosodium glutamate (MSG) used to enhance the flavor of processed foods and in Chinese restaurants, and avoid trans fats. Eat a lot of vegetables, avoid excess carbohydrate, and eschew low fat diets. Avoid, in particular, industrially processed, polyunsaturated vegetable oils, such as corn, safflower, soy, sunflower, cottonseed, and canola oils. Instead, eat healthy fats, which include, in addition to omega-3 fatty acids, stable medium-chain saturated fats, such as coconut and palm oils, and long-chain saturated fats found in meat and dairy products. See "The Oiling of America" by Mary Enig and Sally Fallon, their book *Eat Fat Lose Fat*, Sally Fallon's book *Nourishing Traditions: The Cookbook that Challenges Politically Correct Nutrition and the Diet Dictocrats*, and Barry Grove's *Trick and Treat: how "healthy eating" is making us ill* for interesting information on the health benefits of a low-carbohydrate, high-fat diet and the best fats to eat.

Sites Where I Purchase These Supplements

Vitamin D3	vitalady.com
Iodine	
Lugol's soln.	jcrows.com
Iodoral tabs	vrp.com
Selenium	doctorstrust.com
Vitamin K2	
Menaquinone-7	webvitamins.com
Magnesium	
Mg Citramate	Thorne Research*
Alpha Lipoic Acid	
Thiocid 300	Thorne Research*
Coenzyme Q 10	
CoQ10 100	Thorne Research*
L-Carnitine	Thorne Research*
EPA	
Super EPA	Thorne Research*
Quantum Cod Liver Oil	radiantlifecatalog.com
DHA	
Super EPA	Thorne Research*
DHA	Thorne Research*
Quantum Cod Liver Oil	radiatlifecatalog.com
Resveratrol	longevinex.com
Vitamin A	
Capsules	Thorne Research*
Quantum Cod Liver Oil	radiantlifecatalog.com
Vitamin E	
Unique E	vitaminshoppe.com
Vitamins B1,2,3,5,6,7,9	
B Complex 50	vitaminshoppe.com
Vitamin B12	vitaminshoppe.com
Vitamin C (buffered)	vitaminshoppe.com
Calcium	
Coral Calcium	doctorstrust.com
Potassium bicarbonate	
Potassium Basics	life-enhancement.com
Strontium	
Strontium Bone Maker	vitaminshoppe.com
Zinc	Thorne Research*
Idebenone	vitaminshoppe.com
N-Acetyl-Cysteine	
Cysteplus	Thorne Research*
Acetyl-L-Carnitine	
Carnityl	Thorne Research*
Carnosine	vitaminshoppe.com
Arginine	
Perfusia-SR	Thorne Research*
Conjugated	
Linoleic Acid	doctorstrust.com
Ginko Biloba	doctorstrust.com
Pycnogenol	doctorstrust.com
Silymarin	
TAPS	Thorne Research*
Aged Garlic	
Extract	vitaminshoppe.com
Lycopene	doctorstrust.com
Mushroom Blend	
RM 10	doctorstrust.com
Vinpocetine	Thorne Research*
Chlorella	vitaminshoppe.com
IP-6	
Cell Forte with IP-6	doctorstrust.com
Cucurmin	Thorne Research*
Quercitin	
Quercenase	Thorne Research*
Grapfruit Seed	
Extract	vitaminshoppe.com
Horsetail	
(Nail and Hair)	doctorstrust.com
Hesperidin	
HMC	Thorne Research*
Saw Palmetto	doctorstrust.com
Goldenseal	doctorstrust.com
Stinging Nettle	doctorstrust.com
Probiotics	
Theralac	theralac.com
Fucoidan	
Limu Plus	Vitamark**
Lithium orotate	luckyvitamin.com
Amygdalin	laetrilesupply.com
Melatonin	Throne Research*

Thorne Research*:

Thorne Research supplements can be obtained online from vitamins4you.com or on amazon.com. As a physician, I purchase them directly through thorne.com.

Vitamark**:

I purchase Limu Plus from Vitamark though my wife's website (http://731269.vitamark.com/affiliate/default.asp), as she is an independent affiliate with this company.

I have no financial arrangements or connections with any of the other companies and sites listed here.

March 26, 2009

Donald Miller (send him mail) is a cardiac surgeon and Professor of Surgery at the University of Washington School of Medicine in Seattle. He is a member of Doctors for Disaster Preparedness and writes articles on a variety of subjects for LewRockwell.com. His web site is www.donaldmiller.com.