Physicians Journal on Anti-Aging

A peer review report on the effects of vitamins, minerals, amino acids, enzymes and herbs on the aging process.

Presented by:

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NOTICE: Before undertaking a nutritional support program, it is important that you seek the advice of a qualified health care professional. This medical report is intended for the use of that person.

The purpose of this report is to acquaint you with the most recent information regarding the ingredients included in the Nature's Aide Vitamins Anti-aging formula and the quantities of each.

Birmingham Study – **Vitamin A** (5,000 I.U.)

The Birmingham study revealed that Vitamin A (beta-carotene) and its related carotenoids were shown to protect against various cancers and to enhance resistance directly as an antimutagen and anticarcinogen or indirectly as an antioxidant by reducing cell damage. In particular, increased beta-carotene levels seem to reduce the risk of development of lung cancer, important information for cigarette smokers and people regularly exposed to sidestream smoke. Individuals with low intakes of beta-carotene have a 30% to 220% higher risk of lung cancer than those with a high intake of this nutrient.

Switzerland Medical Study Uncovers Health Dangers – **Vitamin C** (2,700 mg)

A twelve year study of 3,000 people showed that because levels of vitamin C declines with age after midlife an increase in cataracts and bone density problems increase. Additional studies show that vitamin C supplementation results improved maintenance of bone mineral density in postmenopausal women. A U.S. study of 11,348 adults showed that men and women with the highest intake of vitamin C had a 42% decrease in cardiovascular death. Further studies also credit vitamin C with reductions in healing time of wounds, lower risk of stomach and intestinal cancers and providing a boost in disease resistance.

The anti-aging secret – Increased lipid (fat) peroxidation has been associated with accelerated aging and degeneration. One study demonstrated that supplementation for 1 year with vitamin C significantly decreased lipid peroxide levels in elderly subjects.

Can't catch your breath? Vitamin C protects your lungs as it is the major antioxidant present in the extracellular fluid lining the airway surfaces…this helps asthma suffers, people living in polluted air environment, smokers and children of smokers.

The U.S. Navy Study — **Vitamin D** (480 I.U.)

A very large vitamin D study of U. S. Navy personnel found that adequate vitamin D levels may decrease the chance of development of certain lethal skin cancers. Vitamin D is important for bone maintenance and the metabolism and absorption of phosphorus and calcium, it also contributes to the functioning of the reproductive system, the digestive system, and the immune system.

Vegetarians, the elderly, and individuals who have limited exposure to sunlight or ultraviolet light or dark skin pigmentation may be at risk of inadequate vitamin D levels. The elderly may be at particular risk of poor vitamin D status due to decreases in exposure to sunlight, intake of vitamin D-fortified foods, absorption of the nutrient in the gastrointestinal tract, and caloric intake. The skin of elderly individuals also produces approximately half the vitamin D after exposure to the sun as that of a young person. Optimal vitamin D status may be associated with a reduced risk of hypertension and also plays a role in regulating blood pressure.

Good bone mineral density is known to reduce the risk of fractures and osteoporosis. There is considerable experimental and epidemiologic evidence to support the need for calcium and vitamin D supplementation to reduce the risk of fractures and osteoporosis. These studies have found that a daily dose of 800 IU of vitamin D, or 100,000 IU given three times a year, reduces the frequency of both falls and fractures. Ensuring adequate levels of vitamin D throughout adulthood and as one ages is important, especially given the prevalence of vitamin D deficiency in virtually all institutionalized elderly persons. Even in infants and adolescents, vitamin D supplementation can ensure higher bone mineral density, especially in prepubertal girls. It remains unclear whether vitamin D alone reduces fracture rates or whether supplemental calcium is required.

Vitamin E (120 I.U.)

Vitamin E is a fat-soluble vitamin essential to all mammals. Although vitamin E is required throughout an individual's life span, its levels decline with aging, probably owing to lowered caloric intake or poor food choices.
One of the most important functions of vitamin E is to protect cell membranes from damage by reactive oxygen species (ROS), known as oxidative damage. By reacting with a free radical, the tocopherol molecule is converted into the tocopheroxyl radical, which can then be reduced back to harmless tocopherol by either vitamin C or glutathione. Any deficiency of this vitamin can affect the life span of red blood cells.

Vitamin E supplementation raises plasma tocopherol concentration. In general, high intake of vitamin E seems very safe.Very few side effects have been reported in any scientifically controlled studies, with intakes as high as 3200 mg (3200 IU). Vitamin E supplementation is not, however, recommended for individuals undergoing anticoagulant therapy. All forms of natural vitamin E become active antioxidants (free radical scavengers) inside the body.

Thiamin (120 mg)

Thiamin was the first B vitamin discovered, hence its designation as vitamin B1. It is well established that thiamin deficiency can result in the cardiovascular manifestations of "wet beri-beri," sodium retention, peripheral vasodilation, and heart failure. It is also well established that furosemide (Lasix), the most widely prescribed diuretic, has been shown to cause thiamin deficiency in animals and patients with cardiovascular disease.

Although severe thiamin deficiency is relatively uncommon (except in alcoholics), many Americans do not consume the recommended daily allowance of 1.5 mg, especially elderly patients in hospitals or nursing homes. In an attempt to gauge the prevalence of thiamin deficiency in the geriatric population, 30 unselected consecutive outpatients visiting a university outpatient clinic in Tampa, FL, were tested for thiamin levels. Depending on the thiamin measurement, plasma versus red blood cell thiamin, low levels (defined as a level below the lowest reference range for younger-aged groups) were found in 57% and 33%, respectively.

These results highlight the growing body of evidence that a significant

percentage of the geriatric population is deficient in one or more of the B vitamins. Given the essential role of thiamin and other B vitamins to normal human physiology, especially cardiovascular and brain function, routine B vitamin supplementation appears to be worthwhile in this age group.

Riboflavin (60mg) –

There is growing evidence that riboflavin may be important in preventing the development of cataracts, which are commonly associated with aging.

Evidence is building for a role of riboflavin as an antioxidant owing to its role as a precursor for glutathione reductase, the enzyme that reduces oxidized glutathione (GSSG) formed via the glutathione reductase reaction with the concomitant oxidation of reduced nicotinamide adenine dinucleotide phosphate (NADPH).This finding may have implications in the management of rheumatoid arthritis.

A number of studies have demonstrated that certain vitamins, particularly riboflavin and retinol and their derivatives, have the ability to modify molecular reactivity and response to carcinogens. Dietary riboflavin has such an important role. The mechanism of action is control of the induction of repair enzymes (poly[ADP-ribose]polymerase, DNA polymerase beta, and DNA ligase) responsive to carcinogens that cause damage to DNA. Studies have shown that DNA damage increases proportionate to a deficiency of riboflavin and that greater damage to DNA is reversed via riboflavin supplementation.

Niacin (60mg)
Niacin (as niacinamide- 48 mg)

Since the 1950s niacin (vitamin B3) has been known to be effective in lowering blood cholesterol levels. In the 1970s the famed Coronary Drug Project demonstrated that niacin was the only cholesterol-lowering agent to actually reduce overall mortality. Niacin typically lowers LDL-cholesterol levels by 16% to 23% while raising HDL-cholesterol levels by 20% to 33%. These effects, especially the effect on HDL, compare quite favorably to conventional cholesterol-lowering drugs.

It is now known that niacin does much more than lower total cholesterol. Specifically, niacin has been shown to lower LDL cholesterol, the more harmful Lp(a) lipoprotein, triglyceride, CRP, and fibrinogen levels while simultaneously raising beneficial HDL cholesterol levels. Despite the fact that niacin has demonstrated better overall results in reducing risk factors for chronic heart disease compared with other cholesterol-lowering agents, physicians are often reluctant to prescribe niacin. The reason is a widespread perception that niacin is difficult to work with because of the bothersome flushing of the skin. In addition, because niacin is a widely available "generic" agent, no pharmaceutical company stands to generate the huge profits that the other lipid-lowering agents have enjoyed. As a result, niacin does not benefit from the intensive advertising that focuses on the "statin" drugs. Despite the advantages of niacin over other lipid-lowering drugs, it accounts for less than 10% of all cholesterol-lowering prescriptions.

Pyridoxine (150 mg) –

Pyridoxine, or vitamin B6, is an extremely important B vitamin involved in the formation of body proteins and structural compounds, chemical transmitters in the nervous system, RBCs, and hormonelike compounds known as prostaglandins. Vitamin B6 is also critical in maintaining hormonal balance and proper immune function.

Vitamin B6 supplementation appears to offer significant protection against the development of diabetic neuropathy. Diabetics with neuropathy have been shown to be deficient in vitamin B6 and benefit from supplementation. The neuropathy of a vitamin B6 deficiency is indistinguishable from diabetic neuropathy. Individuals with long-standing diabetes or who are developing signs of peripheral nerve abnormalities should definitely supplement their diets with vitamin B6. Vitamin B6 is also important in preventing other diabetic complications.

Folic acid (800 mcg) and Vitamin B12 (99 mcg)

Folic acid and vitamin B12 function together in many biochemical processes. Folic acid deficiency is the most common nutrient deficiency in the world. In studies of depressed patients, 31% to 35% have been shown to be deficient in folic acid. In elderly patients this percentage

may be even higher. Studies have found that among elderly patients admitted to a psychiatric ward, the number with folic acid deficiency ranges from 35% to 92.6%. Depression is the most common symptom of a folic acid deficiency. Vitamin B12 deficiency is less common than that of folic acid deficiency, but it can also cause depression, especially in the elderly. Correcting folic acid and vitamin B12 deficiencies also results in a dramatic improvement in mood.

Folic acid, vitamin B12, and a form of the amino acid methionine known as SAMe (S-adenosylmethionine) function as "methyl donors". They carry and donate methyl molecules to important brain compounds including neurotransmitters. SAMe is the major methyl donor in the body. The antidepressant effects of folic acid appear to be a result of raising brain SAMe content.

Biotin (60 mcg) –

Biotin is a member of the B vitamin family that functions in the manufacture and utilization of carbohydrates, fats, and amino acids. Without biotin, sugar metabolism is severely impaired. Biotin supplementation has been shown to enhance insulin sensitivity and increase the activity of the enzyme glucokinase-the enzyme responsible for the first step in the utilization of glucose by the liver. Glucokinase concentrations in diabetics are low. Evidently, supplementing the diet with high doses of biotin improves glucokinase activity and glucose metabolism in diabetics. In one study, 16 mg of biotin daily resulted in significant lowering of fasting blood glucose levels and improvements in blood glucose control in type I diabetics. In another study in type II diabetics, similar effects were noted with 9 mg of biotin daily. Biotin therapy has also been shown to be quite helpful in the treatment of diabetic neuropathy.

Pantothenic Acid (60 mg) –

Whole blood pantothenic acid levels have been reported to be lower in patients with rheumatoid arthritis than in normal controls. In addition, disease activity was found to be inversely correlated with pantothenic acid levels. Correction of low pantothenic acid levels to normal brings about some alleviation of rheumatoid arthritis symptoms. In one double-blind study, subjective improvement of rheumatoid arthritis symptoms was noted in patients receiving 2 g/day of calcium pantothenate. Patients

tion is extremely significant as magnesium levels have been shown to correlate directly with survival rates. In one study, Chronic Heart Failure patients with normal levels of magnesium had 1- and 2-year survival rates of 71% and 61%, respectively, compared with rates of 45% and 42%, respectively, for patients with lower magnesium levels. These results are not surprising, considering that magnesium deficiency is associated with cardiac arrhythmias, reduced cardiovascular prognosis, worsened ischemia, and increased mortality in acute myocardial infarction.

Zinc (30 mg) –

Zinc deficiency, a well-known complication of Crohn's disease, occurs in approximately 45% of patients with the disorder. Low serum zinc concentrations, low hair zinc levels, malabsorption of zinc, altered urinary excretion of zinc, and impaired taste acuity are commonly found in patients with Crohn's disease. The deficiency of zinc is due to low dietary intake, poor absorption, and excess fecal losses. Zinc deficiency may be the direct cause of the following complications of Crohn's disease

Selenium (180 mcg) –

Selenium, in its vital role in glutathione peroxidase, affects all components of the immune system, including the development and expression of all white blood cells. Selenium deficiency results in depression of immune function, whereas selenium supplementation results in augmentation and/or restoration of immune functions. Selenium deficiency has been found to inhibit resistance to infection through impairment of white blood cell and thymus function, whereas Selenium supplementation has been shown to stimulate white blood cell and thymus function.

The ability of selenium supplementation to enhance immune function goes well beyond simply restoring selenium levels in selenium-deficient individuals. For example, in one study, selenium supplementation (200g/day) to individuals with normal blood selenium concentrations resulted in a 118% improvement in the ability of lymphocytes to kill tumor cells and an 82.3% rise in the activity of natural killer cells. These effects were apparently related to the ability of selenium to enhance the expression of the immune-enhancing compound IL-2 and, consequent-

ly, the rate of white blood cell proliferation and differentiation into forms capable of killing tumor cells and microorganisms. The supplementation regimen did not produce significant changes in the blood selenium levels of the participants. The results indicated that the immune-enhancing effects of selenium in humans require supplementation above the normal dietary intake

Copper (015 mg) –

Copper is an essential element in the human body. About 95% of copper is found in serum as part of ceruloplasmin. Copper is needed by all tissues but is present in highest levels in the liver, where it contributes to energy and detoxification mechanisms. The element is also required to absorb, utilize, and synthesize hemoglobin, maintain the integrity of the outer covering of nerves (myelin), metabolize vitamin C, and oxidize fatty acids. Both excess and deficiency of copper can result in problems such as bone/joint and connective tissue disturbances, cardiovascular degeneration, abnormal electrocardiogram, accelerated aging, depigmentation and dermatitis, anemia, and neurologic impairments. Proper balance of copper with zinc (and other trace elements) is necessary for good health.

Manganese (3 mg) –

Manganese functions in many enzyme systems including those involved in blood glucose control, energy metabolism, and thyroid hormone function. Manganese also functions in the antioxidant enzyme superoxide dismutase (SOD). In guinea pigs, a deficiency of manganese results in diabetes and the frequent birth of offspring who develop pancreatic abnormalities or no pancreas at all. Diabetics have been shown to have only one half the manganese of normal individuals. A good daily dose of manganese for a diabetic is 3 to 5 mg.

Chromium (120 mcg) –

Chromium is a trace element essential to the metabolism of lipids (e.g., cholesterol), glucose, and insulin regulation. The long-term effects of a suboptimal intake of chromium has been related to a decrease in tissue associated with aging and a higher incidence of diabetes and atherosclerosis, particularly in developed nations. Illness, aging, stress (i.e., trauma,

surgery, intense heat or cold), and strenuous exercise seem to increase chromium losses or needs.

Studies of humans with heart disease have demonstrated that chromium deficiency is associated with atherosclerosis, suggesting that optimal chromium levels may reduce the risk of heart disease. Tissues of humans who have died of heart disease have been found to have less chromium than tissues of humans who died of accidental causes. In tissues of patients with atherosclerotic plaque who died of heart disease, no detectable chromium was found. There is also evidence in humans that a diet sufficient in chromium along with selenium, copper, potassium, magnesium, and calcium reduces the risk of cardiovascular disease through a beneficial effect on serum cholesterol and triglyceride levels

Potassium (50 mg) –

Potassium is an essential element in maintaining fluid balance in the cells, transmission of nerve impulses, skeletal muscle contractility, and normal blood pressure. However, it must exist in balance with sodium. During nerve transmission and muscle contraction, potassium and sodium exchange places. Together with high sodium intake, decreased potassium intake may be implicated in hypertension and heart disease. Potassium is also a catalyst in protein and carbohydrate metabolism. Diuretic drugs can deplete potassium and so can be dangerous. When sodium is lost with water from the body, the ultimate damage comes when potassium moves out of the cells with cell water.

Because potassium is one of the nutrients along with magnesium in fruits and vegetables, it has been hypothesized that bone mineral functions as a buffer base and that lifetime buffering of the acid load from the ingestion of mixed diets leads to gradual and accumulated bone loss. This hypothesis suggested that it might be worthwhile to consider decreasing the rate of bone loss through the use of a diet favoring alkaline ash. Since potassium is one of the two minerals that has a known buffering effect, a study reported that greater potassium intake was significantly associated with greater bone mineral density and less decline in bone mineral density for both men and women. Given the increased consumption of carbonated beverages (sodas), which contributes to acid ash, individuals insisting on consuming these drinks should consider potassium and magnesium supplementation and/or a diet containing at

least seven to nine portions of fruits and vegetables a day.

Choline (60 mg) –

Choline supplements have been advocated as a means of preventing the decline in choline reported to occur during exercise. Choline in the diet consists primarily of phosphatidylcholine, which after absorption by the intestinal mucosa is metabolized to choline in the liver. Most choline is rephosphorylated to phosphatidylcholine; however, a small amount of choline is carried to the brain via the blood stream, where it is converted to acetylcholine, a chemical messenger required for adequate nerve impulses and memory storage and retrieval.

Inositol (60 mg) –

Dr. Sheldon Hendler, M.D., Ph.D. claims in his book "The Complete Guide to Anti-Aging Nutrients" like choline, myo-inositol, the biologically active form of inositol is a constituent of phospholipids, those water-insoluble structures that are essential in cell membranes. Myo-inositol is recognized as important in the metabolism of fats, and it has been claimed that it can lower blood concentrations of fats and cholesterol. Inositol protects against cardiovascular disease, protects against diabetes and protects against hair loss.

PABA (300 mg) –

Para-aminobenzoic acid (PABA) is a chemical that bacteria use as part of the process whereby they manufacture folic acid which is then used by bacteria for cell replication. PABA has been used successfully in the control of Dermatitis herpetiformis (DH), even in those not controlling the gluten content of their diet. (DH) is a dermatologic condition that is almost certainly due to a gastrointestinal immunologic disorder. Jejunal biopsy in DH patients shows villous atrophy characteristic of celiac disease, although gastrointestinal symptoms are rare. DH has been referred to as "celiac disease of the skin." The average age of onset of the rash is 7.2 years, with a predilection for the elbows, knees, and buttocks. Skin biopsy shows granular IgA deposits. The characteristic skin lesions found in patients with DH are extremely itchy grouped vesicles most frequently

located on extensor surfaces.

Three Amino Acids –

dl-Methionine (240 mg) and vitamin B6 are essential for normal homocysteine metabolism and are mild cholesterol lowering agents. Some physicians report that they use dl-Methionine for patients with high blood histamine, depression, high copper, and chronic pain, allergies and asthma.

l-Cysteine (150 mg) is a sulfur amino acid that is a biochemical powerhouse. Its most important role takes place in the liver, where it helps the small but ubiquitous protein glutathione to detoxify carcinogens and other dangerous chemicals, and in all the rest of the cells of the body, where it serves as the major scavenger of hazardous oxidants.

Patented methysulfonylmethane (MSM) (450 mg) is a naturally occurring dietary derivative of DMSO, and serves as an important source of bioavailable dietary sulfur and, when administered orally, is effective in ameliorating symptoms of physiological response to stress including gastrointestinal upset, inflammation of the mucous membranes, and pain associated with musculoskeletal system disorders.

MSM appears to augment immunological competence through a natural, vitamin-like moderating or normalizing activity for various body functions and is noted for its exceptionally non-toxic nature.

Couch grass (30 mg) –

David Hoffman, author of "The Herbal Handbook User's Guide to Medical Herbalism", claims couch grass is used as a diuretic, demulcent and antimicrobial. Couch grass may be used in urinary infections such as cystitis, urethristis and prostatitis. As a broadly applicable and safe diuretic is can be used in most conditions where this action is needed. Its demulcent properties soothe irritation and inflammation. It is of value in the treatment of enlarged prostate glands. It can also be used for easing or removing kidney stones and gravel. As a tonic diuretic, couch grass has been used with other herbs in the treatment of rheumatism.

Juniper Berry (6 mg) –

Michael Tierra, C.A., N.D. says, "Juniper berries are primarily used for the treatment of urinary problems, including urine retention, stones and gravel, lumbar pains, uric acid buildup and gout and rheumatic problems. It is anti-inflammatory for arthritic and rheumatic ailments as well as being a useful carminative for indigestion and flatulence."

Odorless Garlic (60 mg) –

One of the major areas of focus in garlic's ability to offer significant protection against heart disease and strokes has been the evaluation of its ability to lower blood cholesterol levels, even in apparently healthy individuals. According to the results from numerous double-blind, placebo-controlled studies in patients with initial cholesterol levels greater than 200, supplementation with commercial preparations providing a daily dose of at least 10 mg alliin or a total allicin potential of 4000 mg can lower total serum cholesterol levels by about 10% to 12%. In addition, LDL cholesterol decreases by about 15%, high-density lipoprotein (HDL) cholesterol levels usually increase by about 10%, and triglyceride levels typically drop by 15%.

Schizanda Berry (60 mg) –

Schizandra has many biological activities including: antibacterial (equivocal results), sympathomimetic (stimulant), resistance stimulation, liver-protective, anti-toxic, anti-allergenic, anti-depressant and glycogenesis stimulant. In addition, and perhaps most interesting from the point of view of it being a folkloric "tonic", this herb protected against the narcotic and sedative effects of alcohol (ETOH) and pentobarbitqal (PB) and exposure to the highly toxic ether, in mice.

Buchu Leaf (30 mg) –

Herbalists consider Buchu a urinary antiseptic. It is used for the relief of water retention, and is an ingredient in two over-the-counter diuretics (Fluidex and Odrinil) marketed to relieve the bloating of premenstrual syndrome (PMS).

Milk Thistle(Silymarin) (30 mg) –

The common milk thistle contains silymarin, one of the most potent liver medicines known. Silymarin's effect in preventing liver destruction relates to its ability, in many instances, to inhibit the factors that are responsible for the damage, i.e. free radicals and leukotrienes. Equally important is its ability to stimulate protein synthesis, which results in an increase in the production of new liver cells to replace the damaged ones.

In human studies, silymarin has been shown to have positive effects in treating several types of liver disease, including cirrhosis, chronic hepatitis, fatty infiltration of the liver (chemical and alcohol induced), subclinical cholestasis of pregnancy and gallbladder inflammation. The therapeutic effect of silymarin in these disorders has been confirmed by microscopic examination of the cells (biopsy), clinical and laboratory data.

Plus this proprietary Herbal Blend (600 mg) –

Ginkgo Biloba leaf – Ginkgo research has proceeded in many different areas. The most interesting and important relate to vascular diseases, brain function, impotency. dopamine synthesis, inflammation and asthma.

Red Ginseng extract – Increases physical and mental endurance, helps the body adjust to stressful situations, normalizes body functions, reduces cholesterol, increases energy, may help reduce discomfort caused by menopause, may inhibit growth of cancerous tumors and may enhance sexual desire.

Green Tea extract – The catechins in green tea are formed by polyphonic compounds. Many researchers have found that phenolic compounds, including green tea catechins, delay the development of arteriosclerosis.

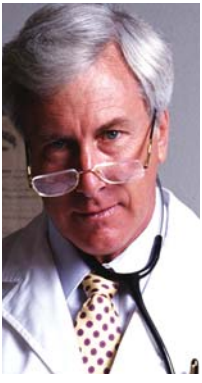
Grape Skin extract –The proanthocyanidins (also referred to as "procyanidins") are one of the most beneficial groups of plant flavonoids. The most active proanthocyanidins are those bound to other proantho-

cyanidins. Collectively, mixtures of proanthocyanidin dimers, trimers, tetramers, and larger molecules are referred to as procyanidolic oligomers (PCOs). Although PCOs exist in many plants as well as red wine, commercially available sources of PCOs include extracts from grape skin (Vitex vinifera)

As you have undoubtedly noticed antioxidants form the backbone of the formula. This is due mainly because a growing evidence of science indicates that antioxidants operate synergistically…that is to say that they support each other and multiply the positive effects. Animal studies indicate that consumption of a greater diversity of antioxidants provides more protection than single supplements.

Respectfully Submitted,

Andrew J. Thompson
Director of Research



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noted improvements in duration of morning stiffness, degree of disability, and severity of pain.

Calcium (as calcium carbonate 390 mg) (as calcium citrate 85 mg) (as calcium amino acid chelate 37 mg)

Supplementation of calcium has become the primary focus in both the prevention and treatment of osteoporosis. In a detailed meta-analysis, 15 double-blind trials, representing 1806 participants, demonstrated that calcium supplementation was more effective than placebo in reducing rates of bone loss after 2 or more years of treatment. The pooled difference in percentage change from baseline in the calcium group was 2.05% for total body bone density, 1.66% for the lumbar spine at 2 years, 1.6% for the hip, and 1.91% for the distal radius. The relative risk of fractures of the vertebrae dropped 21%, but the relative risk for non-vertebral fractures was only 14%. In contrast to the studies with calcium supplements, the same sort of observations with dietary sources of calcium (e.g., milk) have failed to show any association between dietary calcium and osteoporosis unless the intake of calcium is extremely low.

Iodine (75 mcg) –

About 95% of all cases of overt hypothyroidism are primary. In the past, the most common cause of hypothyroidism was iodine deficiency. The thyroid gland adds iodine to the amino acid tyrosine to create the thyroid hormones. Iodine deficiency leads to hypothyroidism or the development of an enlarged thyroid gland (i.e., a goiter), or both.

Goiters are estimated to affect more than 200 million people worldwide. In all but 4% of these cases, the cause is an iodine deficiency. Iodine deficiency is now quite rare in the United States and other industrialized countries due to the addition of iodine to table salt. Adding iodine to table salt began in Michigan, where in 1924 the goiter rate was an incredible 47%.

Magnesium (180 mg) –

Low magnesium levels (particularly white blood cell magnesium) are common findings in patients with Chronic Heart Failure. This associa-