TOTAL CHELATE

Ingredients: Each tablet supplies: EDTA (Calcium Disodium) 200mg, Vitamin B-6 10mg, Niacin 5mg, Biotin 10mg, Magnesium (as chelate) 25mg, Zinc (as chelate) 5mg, Selenium (chelate) 40mcg, Niacinamide 5mg, Inositol 15mg, Choline 25mg, Betaine HCL 10mg, Beta Sitosterol 30mg, Vegetable Lipase 15mg, DL Methionine 15mg, Apple Pectin 50mg, Red Algae (carrageenan) 200mg, Garlic 200 mg.

Supportive Function: Nutritional support for strong, elastic arteries and healthy circulation to the heart, kidneys and brain.

When is chelation support helpful? Poor circulation, blocked arteries, high cholesterol, etc.

Clinical Applications/Research: EDTA (Calcium Disodium) has been safely used since the 1950's for successful reduction of atherosclerotic plaque in cardiovascular disease, treatment of lead poisoning, and as a beneficial food preservative preventing oxidation. EDTA Chelation therapy helps remove calcium deposits and other harmful minerals that promote blood clotting and arteriosclerosis. In combination with other synergistic nutrients including B-6 and garlic, EDTA has an anti-clotting effect and helps reduce blood platelet stickiness. EDTA promotes improved cellular respiration, enhanced mitochondrial action, increased exercise tolerance and walking distance, lessened pain from angina and claudication, improved elasticity of arterial walls, improved function in senility, enhanced bone growth, and improved blood flow. Patients who gain little improvement in blood flow do sometimes show marked improvement of function and relief of symptoms. EDTA helps dissolve metastatic calcium that has been deposited where it is not wanted in the joints, the kidneys, arteries, and the bones of the inner ear. EDTA enhances absorption of beneficial nutrients including B-12 and minerals, although chronic long-term use may lead to nutrient deficiencies. It helps decrease absorption of iron and copper, protects against free-radical damage stemming from iron-copper overload, and prevents copper-catalyzed oxidation of vitamin C. EDTA protects against many toxic metals including nickel, cadmium, vanadium, lead, cobalt, and lowers the body's burden of fission products. EDTA helps lower total cholesterol and improves the deposition of calcium and phosphorus in bone. Patients with lead poisoning experience reduced blood pressure and improved kidney function after EDTA treatment. In a study of 27 patients scheduled for limb amputation due to poor circulation, EDTA resulted in saving 24 limbs. EDTA enhances nitric oxide production, which kills bacteria, protects the heart, stimulates the brain, enhances oxygen delivery to tissues, helps prevent blood clots, and helps regulate blood flow and blood pressure (Cranton EM, "Current Status of EDTA Chelation Therapy in Occlusive Arterial Disease," in *Textbook of EDTA Chelation Therapy* 2nd Ed, Charlottesville,VA: Hampton Roads, 2001; Loren K & Gordon GF, "Oral EDTA, Lead & More," http://www.oralchelation.net/data14k.htm). *Contraindications: May not be appropriate for patients with severe renal disease. Precaution: effects on fetal development have not been established and may be contraindicated in pregnancy. Caution: Doses exceeding 4,000mg daily may have toxic effects.*

Vitamin B-6: McCulley found that heart patients had 80% less of vitamin B-6 than healthy people (*Atherosclerosis Reviews* 1983; (11): 157-246). Supplementation with vitamin B-6 can inhibit platelet aggregation that characterizes atherosclerosis (*Lancet* June 1981; (1) 8233:12-99-1300). B-6 is essential to break down potentially toxic homocysteine into harmless and beneficial forms that do not cause oxidation, clotting, or injury to blood vessel walls.
Niacin or Vitamin B-3, and Niacinamide**,** a form of niacin, increase the activity of two crucial enzymes needed to facilitate conversion of homocysteine into non-toxic substances and provide the sulfur groups necessary for liver detoxification. In a placebo-controlled study of 8000 men who had suffered one heart attack, niacin was shown to be beneficial in lowering the death rate and increasing longevity (Canner et al, *J of the Am College of Cardiology* Dec 1986 8 (6): 1245-55).
Biotin is essential in the metabolism of carbohydrates, fatty acids, and protein. Biotin aids in cell growth, lowers blood glucose, and stimulates the production of insulin.
Magnesium: People who die suddenly from heart attacks have been found to have lower levels of magnesium and potassium than controls (Wood et al, *Lancet* Jul 1984; 2 (8395): 117-21). Magnesium helps dilate arteries and ease the heart's pumping of blood, which may help prevent irregular heartbeats. It can help raise good HDL cholesterol, lower total cholesterol, inhibit platelet aggregation, and help prevent calcium deposits in blood vessels (Seelig & Heggtveit, *Am J of Clin Nutri* Jan 1974; 27 (1): 59-79). Zinc, Selenium, and Magnesium are all essential mineral co-factors in enzymatic reactions in the methionine/homocysteine metabolic pathways. All are co-factors for anti-oxidant enzymes that fight free radicals that damage cells that can lead to atherosclerosis, arteriosclerosis, and heart disease.
Zinc has been shown to shorten the duration of colds by inhibiting viral replication (Landis, *Herbal Defense,* NY: Warner Books, 1997). Zinc, magnesium, and selenium are antagonistic to heavy metals and help remove them from the body.
Selenium is a co-factor in the antioxidant enzymes, glutathione peroxidase and Sn-superoxide dismutase, and is reported to strengthen the immune system. Low serum selenium has been associated with higher incidence of cardiovascular disease (Salonen et al, *Brit Med J* Mar 1991; 302 (6779):756-760). Supplementation of selenium has been shown to reduce platelet aggregation (Stead et al, *Am J of the Med Sci* Dec 1985; 290 (6): 228-233). Cocksaxie virus has been implicated in heart disease under nutritionally deficient circumstances, where it has been described as attacking heart muscle and causing heart failure (Beck & Levander, *Nature Medicine* May 1995; (1) 433-6). In his clinical practice, Dr. Brimhall has found many of his patients with heart problems also have viral infections. Taylor and Ramanathan have built theoretically compelling cases for the viruses, Ebola, HIV, and coxsackie, mutating into aggressively virulent strains triggered by selenium deficiency (*J of Med Chemistry*, Aug. 19, 1994; (37): 26-37-54). It has been theorized that the heart is a likely target since it is one of the largest selenium depots in the body. Taylor believes that adequate selenium acts as an inhibiting factor, shutting down rapid viral replication.
Inositol is most prevalent in the heart and brain. It is necessary for cell membrane formation and aids in the transport of fatty acids.
Choline, a B vitamin, is reported to intensify vitamin B12's effect of reducing homocysteine levels (Olszewski et al, Ibid.)
Betaine HCL: Betaine has been credited with lowering homocysteine levels even when patients were not responsive to other treatments (*NEJM* 1983; (309): 448-453). Betaine has been shown to stimulate an enzyme in the metabolic pathway that renders homocysteine non-

toxic (*Neth J Med* 1994; 45 (1): 34-41). Betaine HCL helps breakdown and digest proteins, fats, and carbohydrates in the stomach, reduce bacterial and viral colonization of the stomach, and enhance the absorption of minerals and other nutrients.

Beta Sitosterol boosts the effects of isoflavones (*J of Urology* 1995; (154): 391; *Cancer Res* 1991; (51): 3445). Isoflavones are special bioflavonoids that block the sorbitol pathway that is linked with oxidative damage in diabetes. They are also known as natural blood thinners that protect blood vessels and reduce platelet aggregation. As antioxidants, bioflavonoids protect cholesterol from oxidative damage. High cholesterol levels in themselves may not be the problem they were first thought to be, but oxidized LDL cholesterol may be the greater issue (Kostner et al, "The interaction of human plasma low density lipoproteins with glucosaminoglycans: influence of the chemical composition," *Lipids* Jan. 1985; 20 (1): 24-28, Lininger et al, 1998:140-1; Potter, SM, "Overview of the proposed mechanisms for the hypo-cholesterolemic effect of soy," *J Nutri* 1995; 606S-611S).

Vegetable Lipase helps split fats into essential fatty acids and glycerol. Supplemental enzymes spare stress on the body's own production of enzymes, helping improve digestion and uptake of nutrients from food (The Burton Goldberg Group, 1995:215-6).

DL Methionine helps remove heavy metal toxins from the body and neutralize free radicals. It also helps the digestive process.

Apple Pectin contains both soluble and insoluble fiber, which lowers fat absorption and cholesterol, and reduces the risk of heart disease. By slowing the absorption of food, pectin has proven helpful to diabetics. The insoluble fiber of pectin binds to cholesterol, heavy metals, and other toxins, and helps remove them from the body (Balch & Balch, 1997: 53).

Red Algae (carrageenan) acts synergistically with EDTA to help remove heavy metal concentrations. Iron is a mineral that can encourage bacterial growth. Chronic infections of many kinds have been implicated in arteriosclerosis, blood clotting, and heart disease. Sulfated polysaccharides in Red Algae's carrageenan show broad-spectrum anti-viral activity. Carrageenan is incorporated into infected cells and inhibits viral replication (http://www.bryantlabs.com/redmarinealgae-abstracts.htm; "Protocol for Chronic Infections," at http://www.gordonresearch.com/Protocols/protocol_cronic_infections.html)

Garlic has been shown to lower LDL oxidation by 34% (*Lipids* 1993; (28): 475-77). One of garlic's components, methyl allyl trisulfide, lowers blood pressure by dilating blood vessel walls. Garlic helps thin blood by inhibiting platelet aggregation, reducing the risk of blood clotting, and aiding in the prevention of heart attacks. Garlic has antibiotic properties useful for reducing chronic levels of infections implicated in heart disease. Garlic also lowers total serum cholesterol levels and helps in digestion (Balch & Balch, 1997:54).

Suggested Dosage: One tablet 3 times daily or as directed.

Size: 90 tablets

Vegetarian: Yes

Contraindications: Contraindicated with blood thinners and in renal disease. Safety in pregnancy has not been tested. Doses exceeding 4,000mg of EDTA daily (one pill contains only 200 mg) may have toxic effects.