Alpha Lipoic Acid

Function:
Lipoic Acid is a sulfur-containing vitamin-like substance that is an important cofactor in energy-producing reactions in the production of cellular energy (ATP). Lipoic acid has been referred to as a “universal antioxidant” because it is soluble in both fat and water. It is capable of regenerating several other antioxidants back to their active reduced states, including vitamin C, vitamin E, glutathione and coenzyme Q10. Alpha lipoic acid has several potential actions for the type 2 (non-insulin-dependent) diabetic. It reduces glycosylation reactions (attachment of sugar moieties to protein) and facilitates healing of diabetic nerve damage. Biochemical reactions utilizing lipoic acid occur within the mitochondria, where it functions critically in its antioxidant capacity.

Deficiency Symptoms:
Several studies demonstrate that individuals infected with HIV have a compromised antioxidant defense system. Blood antioxidants are decreased and peroxidation products of lipids and proteins are increased. These changes deplete glutathione levels and this often compromises cell-mediated immune function and progression of AIDS. Alpha lipoic acid supplementation increases vitamin C and glutathione. T-lymphocyte production and T helper/suppressor cell ratios are increased. Patients with compromised immune symptom performance may benefit by supplementation with alpha lipoic acid.

In patients with diabetic neuropathy resulting from antioxidant deficiency, lipoic acid improves blood flow to peripheral nerves, decreases lipid and protein peroxidation, and may stimulate the regeneration of nerve fibers. There is growing evidence that lipoic acid has beneficial effects in slowing atherosclerotic processes and the neurodegenerative effects of Alzheimer’s. Experimental studies in animal models show that a deficiency of lipoic acid results in reduced muscle mass, failure to thrive, brain atrophy and increased lactic acid production.

Repletion Information:
Lipoic acid is available in tablets and capsules. Because of its unique solubility properties it is easily absorbed and assimilated. It is generally available as a racemic mixture of D- and L-forms of alpha lipoic acid. Patients with diabetes or glucose intolerance are cautioned that supplemental alpha lipoic acid may lower blood glucose levels and adjustments in antidiabetic drug therapy may be necessary to avoid hypoglycemia. Doses of up to 600 mg/day have been well tolerated.