



## Alpha Lipoic Acid

Stock #1505-6 (60 capsules)

Alpha-lipoic acid, also known as lipoic or thioctic acid, is unique among antioxidants for its ability to function in both water- and fat-soluble regions of the body, including the brain and nerve cells, and hence, is often referred to as a *universal antioxidant*. Alpha-lipoic acid is found inside every cell in the body, where it functions as an essential component of energy production—alpha-lipoic acid operates as a key element in the Krebs cycle, the energy-producing cycle within each cell by which glucose is converted into usable chemical energy. Exhibiting significant antioxidant activity, alpha-lipoic acid neutralizes a wide variety of free radicals, many of which are believed to play a significant role in disease processes such as cancer, cataract formation, diabetes, glaucoma, heart disease, and various brain and neurological (nerve) disorders—alpha-lipoic acid readily crosses the blood-brain barrier. In addition, alpha-lipoic acid is capable of regenerating other antioxidants such as vitamins C and E, thereby prolonging their antioxidant activity. In vitro research has also shown that alpha-lipoic acid can raise levels of coenzyme Q10 and intracellular glutathione, one of the

body's most important anticarcinogens and antioxidants. Furthermore, alpha-lipoic acid is capable of chelating heavy metals, repairing damaged molecules, and reducing the oxidative damage caused by free radicals. Alpha-lipoic acid may even assist in slowing the aging process.<sup>1-12</sup>

Results of both animal and human studies suggest a number of clinical uses for alpha-lipoic acid, including:<sup>1</sup>

**Diabetes** - Clinical studies have shown that alpha-lipoic acid can improve glucose tolerance in diabetics by helping to improve insulin function and glucose uptake, and may be a safer alternative to oral hypoglycemic (blood sugar-lowering) medications. In one placebo-controlled trial conducted in Germany, 74 Type II diabetic patients were given either 600, 1,200 or 1,800 mg of alpha-lipoic acid daily or a placebo. After 4 weeks, all "treatment" groups showed an improvement in glucose disposal (uptake) compared to the placebo group, with no significant differences demonstrated between the different alpha-lipoic acid-treated groups. Combined results from the treatment groups showed a 27% increase in insulin-stimulated glucose uptake compared to the placebo group. No serious side effects were noted in any of the treatment groups. Furthermore, one study found that alpha-lipoic acid prevented diabetes in 70% of diabetes-induced mice.<sup>1,2,4,6,11-15</sup>

**Diabetic neuropathy** - A frequent complication of diabetes, diabetic neuropathy is a degenerative nerve condition caused in part by nerve damage from long-term elevated blood-glucose levels—diabetics are prone to increased free radical formation and reduced antioxidant defenses. Numbness, tingling and sometimes burning pain in the feet and legs are the most common symptoms. Available data strongly suggest that alpha-lipoic acid, because of its antioxidant properties, is particularly suited to the prevention and/or treatment of diabetic complications that arise from an overproduction of reactive oxygen and nitrogen species (free radicals). In fact, alpha-lipoic acid is approved in Germany for the prevention and treatment of diabetic neuropathy. A 3-week study was conducted involving patients with Type 2 diabetes with neuropathic symptoms of pain, burning, tingling and numbness in the feet. Patients were randomly assigned to oral treatment with 600mg of alpha-lipoic acid or placebo. Results showed a 47% decrease in total symptoms in the alpha-lipoic acid group, compared to only a 24% decrease in the placebo group, while results for pain alone showed a reduction of 60% in the alpha-lipoic acid group and only 29% in the placebo group.<sup>1,4,6-8,11,16-18</sup>

**Cataracts** - One of the primary mechanisms involved in the formation of cataracts is a deficiency of glutathione levels within the lens of the eye, which hampers antioxidant defenses. In vitro and animal research has shown that alpha-lipoic acid can increase glutathione levels, as well as prevent cataract formation.<sup>19</sup>

**Glaucoma** - Although many cases of glaucoma are characterized by increased intraocular (within the eye) pressure, some patients with glaucoma exhibit normal intraocular pressure but poor circulation, which causes damage to the optic nerve. Individuals with glaucoma, like cataract patients, typically have weakened antioxidant defenses as well. Research indicates that low glutathione levels may contribute to some of the disease processes involved in glaucoma. Studies have shown that alpha-lipoic acid can increase glutathione in red blood cells and lacrimal fluid (tears) of patients with glaucoma, and thus, may hold some potential benefit for treating glaucoma. Russian scientists conducted a study of 45 patients (90 eyes) with stages I and II open-angle glaucoma. The treatment groups received either 75mg or 150mg of alpha-lipoic acid daily for 2 months, while the control group, consisting of 31 patients with open-angle glaucoma, was given only local hypotensive (blood pressure-lowering) medication. Study results showed improvement in visual function in 45% of examined eyes, and was more often demonstrated in patients with stage II open-angle glaucoma. Researchers concluded that the beneficial effect of alpha-lipoic acid could be explained by its antioxidant properties and direct influence on ocular tissue metabolism.<sup>4,19,20</sup>

*Burning mouth syndrome* - A condition characterized by the occurrence of oral pain in an individual with an otherwise normal oral mucosal examination, burning mouth syndrome may be linked to the production of the toxic free radicals produced in stress situations. Research shows that alpha-lipoic acid provides significant improvement in symptoms, most likely due to its ability to increase levels of intracellular glutathione and eliminate free radicals. A double-blind, controlled study was conducted involving 60 patients with constant burning mouth syndrome, with no laboratory evidence of hyperglycemia (excessively high blood sugar levels) or deficiencies of iron, vitamins or thyroid function. After 2 months of treatment, alpha-lipoic acid was shown to provide significant improvement in symptoms, compared to placebo, with the majority of patients demonstrating at least some improvement. Furthermore, at the 1-year follow-up, over 70% of patients had maintained improvement.<sup>21,22</sup>

Alpha-lipoic acid given orally is well-absorbed from the gastrointestinal tract and demonstrates very low toxicity in animal studies. In fact, during more than 30 years of scientific research and clinical studies, no serious adverse effects have been reported. The only reported side effects in humans include allergic skin conditions and possible hypoglycemia in patients with diabetes, resulting from improved glucose utilization. Nevertheless, due to a lack of data, alpha-lipoic acid is not recommended during pregnancy. In addition, alpha-lipoic acid is not recommended in high doses to patients suspected of having a thiamine deficiency, such as alcoholics, without coadministration of thiamine to correct the deficiency. Type I diabetics should consult their physician before using lipoic acid as it may necessitate a change in insulin dosage. Blood sugar levels should be carefully monitored during supplementation to avoid hypoglycemia.<sup>1-4,7</sup>

Each capsule of Alpha-lipoic acid provides 250mg of alpha-lipoic acid, along with turmeric root.

**Turmeric** contains antioxidants known as curcuminoids, which have been shown to provide potent antioxidant, anti-inflammatory and anti-cancer properties. Curcumin, the primary curcuminoid, is more than 5 times as powerful of an antioxidant as vitamin E. Curcumin has been found to chelate and neutralize the free-radical attributes of minerals such as iron, inhibit oxidative enzymes, quench singlet oxygen free-radicals, and block formation of carcinogenic (cancer-causing) nitrosamines. One study showed that participants receiving 500mg of curcumin daily for one week experienced a significant reduction in the free radicals that damage arterial walls. In addition, extensive research over the last 50 years has indicated that curcumin can both prevent and treat cancer. Evidence also suggests that curcumin can suppress tumor initiation, promotion and metastasis. Furthermore, curcumin has been found to be extremely safe, with human clinical trials indicating no dose-limiting toxicity when administered at doses up to 10 grams (10,000mg) per day.<sup>4,23-25</sup>

#### References:

- <sup>1</sup>Wolfson ND, D. "Lipoic Acid: The Universal Antioxidant." *Nutrition Science News*; October 2000.
- <sup>2</sup>Nichols Jr MD, T.W. "a-Lipoic Acid: Biological Effects and Clinical Implications." *Alternative Medicine Review*; 1997, 2(3):177-183.
- <sup>3</sup>Patrick ND, L. "Nutrients and HIV: Part Three – N-Acetylcysteine, Alpha-Lipoic Acid, L-Glutamine, and L-Carnitine." *Alternative Medicine Review*; 2000, 5(4):290-305
- <sup>4</sup>Lininger DC, S., et al. *The Natural Pharmacy*. Rocklin, CA: Prima Health, 1998.
- <sup>5</sup>Clute, M. "Syndrome X: A Sign Of The Times." *Natural Foods Merchandiser*; July 2001.
- <sup>6</sup>Challem, J. "Putting Antioxidants To Use In Functional Formulas." *Functional Foods & Nutraceuticals*; May 2002.
- <sup>7</sup>Joiner-Bey ND, H. "Alpha-Lipoic Acid." *International Journal of Integrative Medicine*; 2001, 3(2):38.
- <sup>8</sup>Bratman MD, S. & Kroll PhD, D. *Natural Health Bible*. Prima Publishing, 1999.
- <sup>9</sup>Packer L, et. al. "Neuroprotection by the metabolic antioxidant alpha-lipoic acid." *Free Radical Biology and Medicine*; 1997;22(1-2):359-378.
- <sup>10</sup>Biewanga, G., et. al. "The pharmacology of the antioxidant lipoic acid." *General Pharmacology*; 1997, 29(3):315-331.
- <sup>11</sup>Packer, L., et. al. "Molecular aspects of lipoic acid in the prevention of diabetes complications." *Nutrition*; 2001, 17(10):888-895.
- <sup>11</sup>Han D, et.al. "Lipoic acid increases de novo synthesis of cellular glutathione by improving cystine utilization." *Biofactors*; 1997, 6(3):321-338.
- <sup>12</sup>Pizzorno, J. & Murray, M. *Textbook of Natural Medicine, 2nd ed*. London: Churchill Livingstone, 1999.
- <sup>13</sup>Estrada, D.E., et. al. "Stimulation of glucose uptake by the natural coenzyme alpha-lipoic acid/thioctic acid: participation of elements of the insulin signaling pathway." *Diabetes*; 1996, 45(12):1798-1804.
- <sup>14</sup>Jacob S, et. al. "Oral administration of RAC-alpha-lipoic acid modulates insulin sensitivity in patients with type-2 diabetes mellitus: a placebo-controlled pilot trial." *Free Radical Biology and Medicine*; 1999, 27(3-4):309-314.
- <sup>15</sup>Faust A, et. al. "Effect of lipoic acid on cyclophosphamide-induced diabetes and insulinitis in non-obese diabetic mice." *International Journal of Immunopharmacology*; 1994, 16(1):61-66.
- <sup>16</sup>Coleman, M.D., et. al. "The therapeutic use of lipoic acid in diabetes: a current perspective." *Environmental Toxicology and Pharmacology*; 2001, 10(4):167-172 .
- <sup>17</sup>Lukaczer ND, D. "Nutrition Q&A." *Nutrition Science News*; November 2000.
- <sup>18</sup>Ruhnau KJ, et. al. "Effects of 3-week oral treatment with the antioxidant thioctic acid (alpha-lipoic acid) in symptomatic diabetic polyneuropathy." *Diabetic Medicine*; 1999, 16(12):1040-1043.
- <sup>19</sup>Head, K.A. "Natural therapies for ocular disorders, part two: cataracts and glaucoma." *Alternative Medicine Review*; 2001, 6(2):141-166.

- <sup>20</sup>Filina, A.A., et. al. "[Lipoic acid as a means of metabolic therapy of open-angle glaucoma]. *Vestnik Oftalmologii*; 1995, 111(4):6-8.
- <sup>21</sup>Drage, L.A., et. al. "Burning mouth syndrome." *Dermatologic Clinics*; 2003, 21(1):135-145.
- <sup>22</sup>Femiano, F. & Scully, C. "Burning mouth syndrome (BMS): double blind controlled study of alpha-lipoic acid (thioctic acid) therapy." *Journal of Oral Pathology and Medicine*; 2002, 31(5):267-269.
- <sup>23</sup>Turmeric." *Health Counselor*; 1997, 9(2):40-42.
- <sup>24</sup>Mead, N. "Turmeric (*Curcuma longa*)." *Natural Health*; September/October 1997:135.
- <sup>25</sup>Aggarwal, B.B., et. al. "Anticancer potential of curcumin: preclinical and clinical studies." *Anticancer Research*; 2003, 23(1A):363-398.