

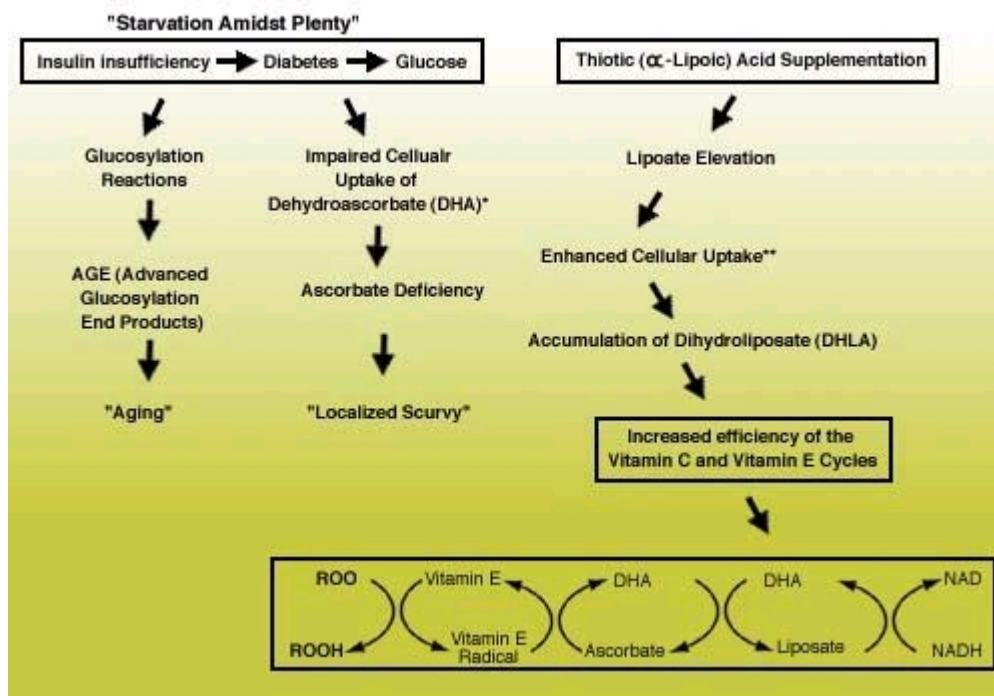
# UPDATE

## Alpha Lipoic Acid

### TREATMENT OF DIABETIC NEUROPATHIES

One of the most damaging complications of diabetes is nerve damage at various sites of the body, which inactivates and weakens muscles, can be extremely painful, and can cause blindness when the retina of the eye is attacked (diabetic retinopathy). Alpha lipoic acid has been shown to be highly effective in treating such neuropathies.

The clinical benefits of alpha lipoic acid in diabetics was discovered by Beck and Schneeweiss in 1959. There have been a half dozen or so studies since then confirming these results. In a placebo controlled, double blind study, 20 diabetics were given intravenous infusions of 200 mg a day of alpha lipoic acid or placebo for 21 days. The results showed dramatic improvement in some clinical symptoms in some of the experimental subjects. For example, before being treated with alpha lipoic acid, four patients had severe pain and six patients had moderate pain. After treatment, five of the patients had no pain, four had moderate pain, and only one had severe pain.



In a longer single blind study, alpha lipoic acid was compared to vitamin B1 as a treatment for diabetic neuropathy. In this study, 600 mg/day of alpha lipoic acid or 400 mg mg/day of vitamin B1 were administered intravenously and intramuscularly, respectively, to diabetics for 3 weeks, followed by 12 weeks of oral administration of the same doses. Pain and paresthesia were reduced significantly in the alpha lipoic acid patients compared to the vitamin B1 patients.

In neither of the above studies, was any improvement found in motor or sensory nerve condition velocity, but scientists point out that such neurophysiology changes can take months or years to occur and that the clear cut clinical benefits found in these studies indicate that continued treatment in diabetics with alpha lipoic acid would likely improve all the functions damaged in diabetic neuropathies.

Fig. 4 is a schematic diagram showing the various mechanisms by which alpha lipoic acid supplementation benefits diabetes patients.

## ALPHA LIPOIC ACID PROTECTS AGAINST NERVE CELL DEATH

In recent years, scientists have found a method of nerve cell death in stroke and neurodegenerative disorders such as Parkinson's disease and Huntington's disease is excitotoxicity (excessive activation) of NMDA (N-methyl-D-aspartate receptors, and the subsequent generation of nitric oxide, free radical induced lipid peroxidation, aberrantly increased calcium concentration, and mitochondrial dysfunction leading to, depleted energy supplies.

There is evidence that depletion of reduced glutathione makes neurons more susceptible to excitotoxicity, and that intact mitochondrial function is essential for neuronal resistance to excitotoxic attack. It is believed, for example, that reduced levels of the energy currency of the cell (ATP) that accompanies loss of mitochondrial function causes depolarization of neuronal membrane, which exposes NMDA receptors to excessive levels of glutamate. The resulting neurohormonal cascade leads, in many cases, to the death of neurons in the brain, and central and peripheral nervous systems.

Scientists have been trying to develop, anti-excitotoxic therapies that are NMDA receptor antagonists this counter this kind of neuronal cell death. A recent study at the Dept. Of Neurology at the University of Rochester, N.Y. at the University of Rochester Medical Center in Rochester, N.Y. demonstrated that alpha lipoic acid protected against glutamate and malonic acid induced lesions in the brains of male Sprague-Dawley rats.

They found a significant reduction of lesions in animals receiving 10 mg/kg injections of either alpha lipoic acid or DHLA (Fig. 5). The University of Rochester scientists concluded that:

*"Excessive activation of NMDA receptors by glutamate has been implicated in the neuronal damage associated with hypoxia/ischemia and hypoglycemia. In contrast, it is hypothesized that chronic neurodegenerative disorders may involve a form of secondary excitotoxicity induced by metabolic or membrane defects rather than excessive glutamate release. The fact that thiotic acid (alpha lipoic acid) and dihydrolipoic acid (DHLA) are neuroprotective against both direct and secondary excitotoxicity suggest a possible role for these endogenous compounds in the treatment of acute and chronic neurological disorders. In this regard, it is worth noting that thiotic acid is an approved drug for the treatment of diabetic polyneuropathy in Germany"*

continuation of this article  
Sprouting Neurites in Rat Neurons

[Back to the Magazine Forum](#)

All Contents Copyright © 1995-2009 Life Extension Foundation All rights reserved.

**LifeExtension**<sup>®</sup>

These statements have not been evaluated by the FDA. These products are not intended to diagnose, treat, cure or prevent any disease. The information provided on this site is for informational purposes only and is not intended as a substitute for advice from your physician or other health care professional or any information contained on or in any product label or packaging. You should not use the information on this site for diagnosis or treatment of any health problem or for prescription of any medication or other treatment. You should consult with a healthcare professional before starting any diet, exercise or supplementation program, before taking any medication, or if you have or suspect you might have a health problem. You should not stop taking any medication without first consulting your physician.