

LE Magazine March 1996

UPDATE

Alpha Lipoic Acid

SPROUTING NEURITES IN RAT NEURONS

Further evidence that alpha lipoic acid can provide therapeutic benefits in patients with neuropathies comes from tissue culture studies in which exposure to alpha lipoic acid resulted in the sprouting of neurites (the small branches at the end of neurons) in early stage rat neurons that far exceeded that found in control neurons.

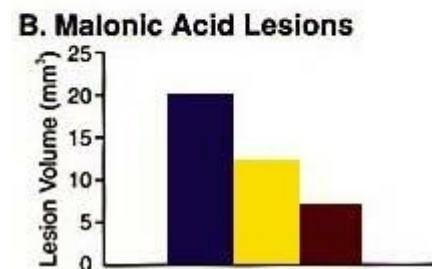
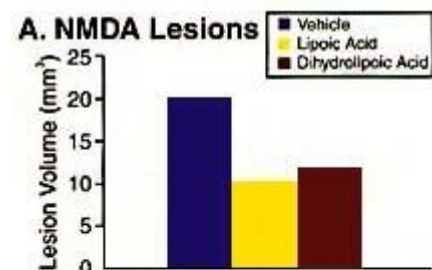
In this study, which was conducted at the Max Planck Institute For Physiology in Frankfurt, Germany, the length of the neurites in the alpha lipoic acid treated neurons was five times that of the untreated neurons and there were far more branchings in the experimental tissue culture neurons. These changes were dose dependent. The more alpha lipoic acid added to the culture medium the greater the density and length of the neurons.

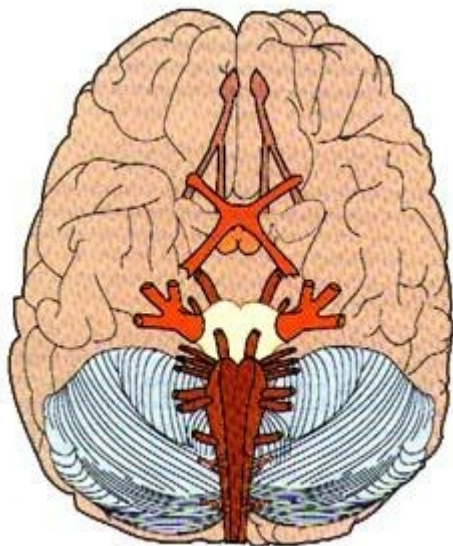
The scientists concluded that, since the first step in neuronal regeneration consists of neurite elongation, this finding suggests that alpha lipoic acid may be able to help regenerate neurons in humans, which would make it a potentially useful therapy for brain diseases such as Alzheimer's disease, Parkinson's disease, Lou Gehrig's disease, and other age-related neurodegenerative diseases.

IMPROVED MEMORY IN AGED MICE

To test the hypothesis treatment with the appropriate free radical scavenger can improve age-related memory deficit, researchers at the Clinical Institute for Mental Health in Mannheim, Germany used aged female NMRI mice, who have demonstrated to exhibit specific well defined memory deficits with advancing age, as well as deficits of NMDA receptors density, which have been linked to age-related cognitive decline.

The German scientists gave old, but healthy 20-23 month old female alpha lipoic acid at 100 mg/kg of body weight dissolved in Methocel (1%) administered orally once a day for 15 days, with controls receiving Methocel alone. The treatment was started 14 days before the beginning of behavioral memory testing. A second group of aged mice used for biochemical analysis was also treated for 15 days, and a third group of young (3-4 months) mice were tested as well. The mice were tested on their ability to explore a series of maze like compartments within a special area.





The results showed that two factors influenced learning and memory age and treatment with alpha lipoic acid. The scientists found that long term memory, but not short term memory or learning was impaired in aged female NMRI mice with the repetition of trials. On the other hand, the mice treated with alpha lipoic acid showed marked improvement in learning and memory when compared to aged, untreated controls. This improvement of cognitive function was correlated with an increase in NMDA receptor density, suggesting that the memory enhancing effects of alpha lipoic acid may be linked to the age related decline in the density of these receptors.

EFFECTS ON CATARACT FORMATION

Another common complication of diabetes is cataract formation in the eye, which can lead to blindness. In animal studies supplementation with alpha lipoic acid has prevented cataract formation caused by inhibition of glutathione synthesis. These studies showed that alpha lipoic acid reduced cataract formation by 40% by protecting the lens of the eye from the loss of vitamin C, vitamin E, and glutathione, which occurred in unsupplemented control animals.

PROTECTION AGAINST ATHEROSCLEROSIS

Diabetics have a significantly higher incidence of atherosclerosis than healthy people. There is substantial evidence that the ability of alpha lipoic acid to counteract glucose modification of proteins (glycation) plays an important role in protecting us against atherosclerosis. Both alpha lipoic acid and DHLA have been shown to protect a wide variety of tissues from the protein cross links produced by glycation, and the oxidation of LDL cholesterol, which plays a critical role in the formation of atherosclerotic plaques. This process is a cause of high blood pressure, heart attacks and strokes. Much has been written about the ability of aminoguanidine and chromium to counteract the molecular cross links caused by glycation, but it appears as if alpha lipoic acid may be even more effective than both these compounds in countering the degenerative effects of glycation. This suggests that alpha lipoic acid may play a role in preventing some of the aspects of normal aging, as well as in protecting us against diabetes and neurodegenerative diseases.

PROTECTION AGAINST OTHER PATHOLOGIES

Among the other therapeutic uses for alpha lipoic acid has been the treatment of liver disease caused by excessive alcohol intake, as an antidote for various types of Coed poisoning, as a means of countering the effects of ischemic (reduced blood flow) and reperfusion injury, as a means of protecting against heavy metal poisoning, radiation in- jury, and the effects of cigarette smoking.

NO ADVERSE SIDE EFFECTS

In all the clinical studies to date with alpha lipoic acid, there have been no reported serious adverse side effects, even at the high doses used to treat diabetics and patients suffering from neurodegenerative diseases. Among the mild, reversible side effects found in some patients have been allergic skin reactions, and possible hypoglycemia in diabetics.

[Back to the Magazine Forum](#)

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

LifeExtension[®]

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.