Alpha Lipoic Acid

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AIpha Lipoic Acid (ALA), also known as thioctic acid, has gained considerable attention as an antioxidant. ALA combats particularly nasty free radicals such as superoxide radicals, hydroxyl radicals, hypochlorous acid, peroxyl radicals, and singlet oxygen, thereby reducing oxidative stress. ALA is a small molecule, soluble in both water and fat. This allows it to work both inside the cell and at the membrane level, making ALA a particularly valuable antioxidant.

In general, antioxidants provide a preventive measure against the hazards of oxidative stress with their ability to neutralize, balance and sponge up free radicals by coupling with unpaired electrons. ALA is unique since it not only acts as antioxidant against free radicals, but it also helps in the regeneration process of expended antioxidants, returning them to their reduced, antioxidant-potent form. In other words, it helps to recycle other antioxidants. Consequently, ALA is a key ingredient in providing the maximum interaction among antioxidants, enhancing their cell protection abilities. It has the unique ability to enhance the power of vitamin E, C and Glutathione. This results in an antioxidant network which provides more complete cell protection from destructive free radicals.[1]

In addition to its antioxidant functions, ALA also has a metabolic role to play in the body: It facilitates the production of energy by aiding in the metabolism of glucose. This energy production is vital for athletes and active individuals to function at maximum efficiency, or peak levels. Since ALA has both antioxidant and metabolic functions, it is considered to be a metabolic antioxidant.

Perhaps the most significant body of research on ALA has been on its contribution to the treatment of diabetes. Following is a discussion of that research, as well as some of the other purposes for which ALA has been used.

ALA and diabetes

In one study, seventy-four patients with type-2 diabetes were given either a placebo, or ALA. When compared to the placebo group, those receiving the ALA had significantly greater insulin-sensitivity and improvement in insulin-stimulated glucose disposal. The researchers logically concluded, "The results suggest that oral administration of alpha-lipoic acid can improve insulin sensitivity in patients with type-2 diabetes."[2] Another benefit of ALA use in diabetics has to do with diabetic neuropathy. In one study on type 2 diabetics, ALA treatment was associated with "a favorable effect on neuropathic deficits without causing significant adverse reactions."[3] In another two-year study, ALA "appeared to have a beneficial effect on several attributes of nerve conduction" in a group of type 2 diabetic patients.[4] Additional research on diabetics has shown that ALA has been able to improve other aspects of diabetic neuropathy,[5] [6] including improvements in neuropathy symptoms.[7] [8] [9]

Another important consideration is that

oxidative stress caused by free radicals can exacerbate the diabetic condition. Research provides evidence that, in type 2 diabetics, treatment with ALA significantly improves antioxidant defense[10]—even in patients with poor blood sugar control and albuminuria (i.e., too many serum proteins in the urine).[11]

Finally, one of the most important benefits offered to diabetics by ALA is the fact that it has been shown to enhance the disposal of blood sugar in patients with type 2 diabetes, which gives it great potential as a blood sugar lowering agent.[12] In a related study of lean and obese diabetic patients treated with ALA, the ALA prevented increases in metabolites that are typically associated with high blood sugar, and also increased blood sugar effectiveness.[13]

Other uses for ALA

In his book, The Wrinkle Cure, Dr. Nicholas Perricone[14] recommends ALA as part of a strategy for maintaining healthy skin and reducing the potential for wrinkles. ALA also has value as part of a complete program for facilitating the liver's detoxification process.[15] In research, 150 mg of ALA per day for one month was shown to improve visual function in people with some types of glaucoma.[16] Finally, in a preliminary trial[17] three patients with cirrhosis of the liver and dilated veins in the esophagus (which can rupture and cause fatal bleeding) caused by hepatitis C received a combination of 300 mg ALA twice daily, 300 mg silimarin from milk thistle three times daily, and 200 mg selenium twice daily). After five to eight months, all three patients had significant improvements in their liver function and overall health (note: they also used other supportive supplements included vitamin C and B vitamins).

References

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