Acetyl-L-Carnitine Reduces Oxidative Damage in Brains

Acetyl-L-carnitine decreases oxidative stress in aging brains, according to researchers at the University of California, Berkeley.*

L-carnitine plays an essential role in energy production by transporting fatty acids into the mitochondrial matrix for oxidation. Both L-carnitine and its metabolite, acetyl-L-carnitine, have been reported to improve mitochondrial function. The California researchers compared the effects of equal doses of L-carnitine and acetyl-L-carnitine on brain and plasma levels of carnitine, movement activity, and markers of oxidative stress in rats.

Aged rats were supplemented with either L-carnitine or its activated form, acetyl-L-carnitine, for four weeks. Plasma and brain levels of L-carnitine and acetyl-L-carnitine were then measured. Ambulatory activity of the rats was assessed, as were markers of oxidative damage in the brain tissue.

Both L-carnitine and acetyl-L-carnitine supplementation raised circulating and brain levels of carnitine. Both forms were also effective in improving ambulatory activity in the aged rats. When measures of oxidative stress in the brain were examined, however, acetyl-L-carnitine was found to decrease oxidative damage, while L-carnitine was not effective.

Since tissue levels of L-carnitine decline with age, supplementing with either L-carnitine or acetyl-L-carnitine may be beneficial for adults. Both forms boost plasma and brain levels of carnitine, while increasing ambulatory activity. For protecting brain health, however, only acetyl-L-carnitine appears to offer neuroprotection from oxidative stress. This finding may have important applications for the prevention and management of neurodegenerative disorders.

—Linda M. Smith, RN

Reference

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