

L-Carnitine



Item number: AM136
Delivery system: Vegetarian capsules
Amount per bottle: 30 capsules
Serving size: 1 capsule (500 mg)



INGREDIENTS PER SERVING

L-Carnitine (free form) 500 mg

Other ingredients: tricalcium phosphate, hydroxypropyl methylcellulose, magnesium trisilicate, magnesium stearate and water.

INDICATIONS

Energy production in association with cardiovascular and Alzheimer's disease.

MECHANISM OF ACTION

L-Carnitine is synthesized in the liver and kidneys, and then transported to tissues that use fatty acids as their primary fuel, such as skeletal and cardiac muscle. L-Carnitine is essential in mitochondrial beta-oxidation of fatty acids for energy production. All long-chain fatty acids must be in the form of L-Carnitine esters in order for them to enter the mitochondria for oxidation. Proteins of the acyl-carnitine transferase family transport these esters into the mitochondrial matrix, where carnitine-palmitoyl transferase catalyzes the transfer of fatty acids into the cytosol from Co-enzyme A to L-Carnitine, which is the rate limiting step in fatty acid oxidation. Next, the acyl-carnitine esters are transported into the inner mitochondrial membrane where fatty acids are transferred from L-Carnitine to free Co-A, where they are metabolized through beta-oxidation, yielding propionyl-CoA and acetyl-Co A.

RESEARCH STUDIES

L-Carnitine has been touted for its effectiveness of reducing risk factors for cardiovascular disease. In fact, one study found that after 2 months of L-Carnitine supplementation in hemodialysis

DESCRIPTION

L-Carnitine is a non-essential amino acid that is a derivative of lysine. It is highly concentrated in skeletal and heart muscle, where it plays an essential role in the transport of long chain fatty acids into the mitochondria for energy production.

patients, there was a significant drop in serum triglycerides and VLDL, whereas HDL was significantly raised. In addition, a recent review of conditionally essential nutrients, such as L-Carnitine, related to cardiac disease found that it was vital to replace dietary deficiencies in order to prevent myocyte dysfunction and loss.

As well, L-Carnitine has been associated with decreasing hospital utilization in patients with end stage renal disease (ESRD). Due to the fact that hospitalization accounts for almost half of the costs of managing ESRD, a retrospective study was completed to analyze whether consistent supplementation with L-Carnitine would decrease the use of hospitalization in this disease. The results show that in patients with an average of 9.7 months of supplementation with a mean dosage of 1.5 g per day there was a significant reduction in the risk of hospitalization. The associated decrease in hospital days was found to be considerably higher in those patients taking L-Carnitine who had known cardiovascular disease.

L-Carnitine has also been used clinically to aid in the treatment of Alzheimer's disease, a condition that affects more than 5 million people in the United States, according to the Alzheimer's Association. One recent study showed a promising effect of L-Carnitine when used in combination with acetylcholinesterase inhibitors. The 3 month research used a dosage of 2 g per day in addition to the subject's prescription, which caused a 12% increase in response rate.

ADVERSE REACTIONS

L-Carnitine appears to be well-tolerated, although large doses may cause some gastrointestinal distress.

DOSAGE AND ADMINISTRATION

Typical dosage is 500-1000 mg per day, gradually working up to a therapeutic dose of 2,000 to 4,000 mg per day. Doses of 2 to 6 grams per day are typically recommended for cardiovascular and weight loss benefits.

STORAGE

Store between 20-25 °C (68-77 °F).

Keep out of reach of children.

RESOURCES

1. Allard, ML, et al. The management of conditioned nutritional requirements in heart failure. *Heart Fail Rev.* 2006 Mar;11(1):75-82.
2. Bianchetti, A, et al. Effects of acetyl-L-Carnitine in Alzheimer's disease patients unresponsive to acetylcholinesterase inhibitors. *Curr Med Res Opin.* 2003;19(4):350-3.
3. Rebouche CJ. Carnitine. In: Shils ME, Shike M, Ross AC, Caballero B, Cousins RJ, eds. *Modern Nutrition in Health and Disease.* 10th ed. Philadelphia: Lippincott, Williams & Wilkins; 2006:537-544.
4. Kazmi, WH, et al. Carnitine therapy is associated with decreased hospital utilization among hemodialysis patients. *Am J Nephrol.* 2005 Mar-Apr;25(2):106-15. Epub 2005 Mar 10. Review.

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