

Abstract

Am J Clin Nutr. 2007 Dec;86(6):1738-44.

L-Carnitine treatment reduces severity of physical and mental fatigue and increases cognitive functions in centenarians: a randomized and controlled clinical trial

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BACKGROUND: Centenarians are characterized by weakness, decreasing mental health, impaired mobility, and poor endurance. L-Carnitine is an important contributor to cellular energy metabolism.

OBJECTIVE: This study evaluated the efficacy of L-carnitine on physical and mental fatigue and on cognitive functions of centenarians.

DESIGN: This was a placebo-controlled, randomized, double-blind, 2-phase study. Sixty-six centenarians with onset of fatigue after even slight physical activity were recruited to the study. The 2 groups received either 2 g levocarnitine once daily (n = 32) or placebo (n = 34). Efficacy measures included changes in total fat mass, total muscle mass, serum triacylglycerol, total cholesterol, HDL cholesterol, LDL cholesterol, Mini-Mental State Examination (MMSE), Activities of Daily Living, and a 6-min walking corridor test.

RESULTS: At the end of the study period, the levocarnitine-treated centenarians, compared with the placebo group, showed significant improvements in the following markers: total fat mass (-1.80 compared with 0.6 kg; P < 0.01), total muscle mass (3.80 compared with 0.8 kg; P < 0.01), plasma concentrations of total carnitine (12.60 compared with -1.70 μmol ; P < 0.05), plasma long-chain acylcarnitine (1.50 compared with -0.1 μmol ; P < 0.001), and plasma short-chain acylcarnitine (6.0 compared with -1.50 μmol ; P < 0.001). Significant differences were also found in physical fatigue (-4.10 compared with -1.10; P < 0.01), mental fatigue (-2.70 compared with 0.30; P < 0.001), fatigue severity (-23.60 compared with 1.90; P < 0.001), and MMSE (4.1 compared with 0.6; P < 0.001).

CONCLUSIONS: Our study indicates that oral administration of levocarnitine produces a reduction of total fat mass, increases total muscular mass, and facilitates an increased capacity for physical and cognitive activity by reducing fatigue and improving cognitive functions.

PMID: 18065594