L-CARNITINE FOR GRAVES' DISEASE AND GRAVES' OPHTHALMOPATHY

An Effective Natural Treatment for Hyperthyroidism

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The amino acid L-carnitine effectively inhibits the activity of excess thyroid hormone and reduces symptoms of hyperthyroidism. For this reason many practitioners are now using L-carnitine for their patients with Graves' disease.

Clinical Studies

Studies dating back to the 60's in animals and recently in humans suggest that the amino acid L-carnitine blocks the effects of excess thyroid hormone in some of the body's tissues. L-carnitine does not affect the thyroid gland itself but effectively reduces symptoms of hyperthyroidism in the autoimmune hyperthyroid disorder Graves' disease because of its ability to block the effects caused by excess thyroid hormone.

The Effects of L-carnitine

The primary effects of L-carnitine are on the physiological activity that thyroid hormone normally causes. Specifically, L-carnitine blocks the entry of excess thyroid hormone into the cell nucleus of liver cells, neurons (cells of the brain and central nervous system), and cardiac cells, thereby reducing the symptoms associated with hyperthyroidism.

Overall, study results show that the addition of 1-3 grams of oral carnitine daily is an effective tool for reducing symptoms of nervousness, heat intolerance, insomnia, emotional instability, tremors, and excessive sweating in hyperthyroidism. Used alone or in conjunction with anti-thyroid drugs or alternative medicine, L-carnitine is a welcome addition to any program used for the management of hyperthyroidism.

Physiological Effects of L-Carnitine

L-Carnitine's effects are related to its ability to inhibit the entry of both thyroxine (T4) and triiodothyronne (T3) into the cell nucleus. This is important because entry into the cell nucleus is essential for thyroid hormone to cause the effects commonly associated with hyperthyroidism. In clinical observations, L-carnitine reduces effects in both mild hyperthyroidism and in the severe form of hyperthyroidism known as thyroid storm.

Studies showed benefits starting with the second week of treatment using 2-4 grams of L-carnitine daily including reduction of goiter size, I-131 uptake, liver enzyme levels, and an improvement in eye symptoms including ophthalmopathy. In addition L-carnitine has a beneficial effect on muscle function, strength, and bone mineralization.

Because hyperthyroidism depletes the body of L-carnitine and other nutrients, doses of L-carnitine as high as 4 grams daily are not associated with toxicity, teratogenicity (effects on offspring), contraindications or interactions with other drugs. A naturally occurring substance, L-carnitine is a known protector of mitochondrial function in the body's cells.

Decreased L-carnitine Levels Seen in Patients with Thyroid Disease

Studies of patients with both hypothyroidism and hyperthyroidism show decreased levels of L-carnitine in muscle cells. These deficiencies are known to contribute to the muscle fatigue commonly seen in both of these conditions. L-carnitine is also known to improve energy production in cell mitochondria. For these reasons, patients with thyroid disease frequently note a reduction in fatigue after starting L-carnitine.

Side Effects and Dosage

In one study involving 50 patients with hyperthyroidism, L-carnitine caused mild nausea in two patients during the first week of treatment. These symptoms did not require a discontinuation of treatment, and they subsided within a few days. L-carnitine caused no significant alterations in blood counts, serum proteins, bilirubin levels, blood sugar levels or urine chemistry levels.

L-carnitine is best absorbed when used as a supplement containing *L-acetyl-carnitine*. L-acetyl-carnitine is available at most health food stores, and is effective for treating hyperthyroidism related to Graves' disease, toxic multinodular goiter, and the excessive use of thyroid replacement hormone. Doses from 500 mg to 4000 mg (4 grams) are used in patients with thyroid disease. For most patients a 500 mg capsule taken twice daily is adequate although some patients, especially those with long-standing thyroid disease or severe thyroid disorders, may require higher doses.

Resources:

Salvatore Benvenga, Rosaria Ruggeri, Antonia Russo, Daniela Lapa, Alfredo Campenni and Francesco Trimarchi, Usefulness of L-Carnitine, a Naturally Occurring Peripheral Antagonist of Thyroid Hormone Action, in Iatrogenic Hyperthyroidism: a Randomized, Double-Blind, Placebo-controlled Clinical Trial. The Journal of Clinical Endocrinology and Metabolism, 86(8); 201:3579-3594.

Salvatore Benvenga, Antonino Amato, Menotti Calvani, and Francesco Trimarchi, Effects of Carnitine on Thyroid Hormone Action, Annals of the New York Academy of Sciences, Nov 2004, 1033:158-167.

Stephen DeFelice, Carnitine for the Treatment of Hyperthyroidism and Carnitine and Thyroid Hormone, A Potential Treatment for Obesity, The Foundation for Innovation in Medicine, Nov 1, 2002.

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