

Carnitine, When 'Enough' Just Isn't Enough

A question that is often asked, particularly with regards to this particular amino acid is: if my body already makes it, why do I need to take it? This is a fair question. While Carnitine is not a vitamin, since it is produced by the body as well as synthesized from food, common logic dictates that there is no reason to add more of it to the body. The simple answer is scarcity and surplus.

In certain parts of the world's oceans, there are coral reefs that are teeming with sea life. Fish, sponges, coral, etc. exist in endless variety and splendor. If you were to only look at one part of such an environment, one might conclude that there is no reason to change this environment. Everything in it is getting along perfectly fine. In another section of this same reef, however, the fish are bigger, healthier, more prolific and in greater variety. The only difference in the two sections being the availability of food and nutrients. In one section, there is 'enough', but elsewhere sustenance exists in 'abundance'. For many of us, I'm sure you make 'enough' money, but you wouldn't pass up an opportunity to have it in 'abundance'.

The same principle applies to Carnitine. While most people can survive with what their body produces, which is 'enough' but more commonly, people tend to feel much better and generally improve when there is Carnitine in 'abundance'. The clinical example is the vegetarians and the omnivorous people. Carnitine is found in greater amounts in animal meats and dairy than in vegetables, and so those who do not eat meat have much lower amounts of carnitine available in their bodies.

Carnitine is a very important amino acid. Its most important role is transporting large-chain fatty acid metabolites from

the outer membrane of the cell into the mitochondria so that they can be used to make energy. They also deliver the waste and byproducts of this energy production process away from the mitochondria and out to where they can be taken and processed and thus preventing damage to the mitochondria. This makes it a vital factor in cells with high-energy demands like nerve cells, bone cells, and heart muscle.

While many of us who are currently healthy and active with a well-balanced diet produce sufficient carnitine to get by, those with certain health problems may benefit tremendously from carnitine supplementation.

Carnitine is most commonly recommended for improvements in heart health. A number of studies show that oral carnitine supplementation can relieve hypertension, lower systolic blood pressure and thereby lower the risk of cardiovascular disease and heart attack.

Carnitine is also very commonly marketed as a weight loss aid and to improve the effects of athletic exercise. While carnitine doesn't in itself cause weight loss, it does, however, improve fat metabolism and facilitate energy supply to the muscles and in that method contribute to a weight loss program carried out by a determined individual.

Some of the lesser-known wonders of carnitine are actually quite fascinating. Carnitine, particularly, Acetyl-L-Carnitine (ALC) which is a form of carnitine that is absorbed more efficiently in the small intestine and can cross the blood-brain barrier due to its size and shape, has been used in studies conducted on chronic alcoholics. It is common knowledge that alcoholism reduces cognitive performance and can lead to toxic overload of the liver. A three-month study on alcoholics using ALC showed

that it improved cognitive performance and also assisted the liver in processing and removing ethanol from the liver, protecting the liver from cirrhosis.

Since the source of alcoholism may, in some cases, stem from mental disorders, it is also important to know that carnitine has been shown to have tremendous benefit on a number of mental and brain related medical conditions as well, including depression, ADHD, Fragile X Syndrome and even Alzheimer's disease.

With depression, a study conducted on 204 people with moderate depression were separated into two groups, one was administered ALC and the other was given the standard medication, amisulpride which is an established anti-psychotic that has demonstrated efficacy on depression symptoms. Over the course of twelve weeks, all the patients were monitored for their symptoms and side effects. By the end of twelve weeks, both groups had a similar improvement rate in depression symptoms. However, almost thirty percent of those taking amisulpride experienced adverse events while in the ALC group, only 9.5 had such events. This means that ALC is a far superior therapy option because it is much safer and equally effective.

Fragile X Syndrome (FXS) is the most common form of inherited mental retardation. It is caused by a mutation in the X chromosome. While it can affect both boys and girls, 90 percent of boys affected show mild to severe mental retardation compared to 30 percent of girls. The affected children, nearly 75 percent of the time, show symptoms identical to ADHD, but treatment using stimulant medications, which are the standard therapy for ADHD often worsen the symptoms. Research into alternative medications that are non-stimulant based is ongoing. In a double-blind placebo-controlled study

conducted over one year on 51 boys with FXS, the results were very promising. The boys in the ALC group showed behavioral and social improvement greater than the placebo group and demonstrated the safety of 1000 mg daily dose of ALC for one year in children aged 6-13 years.

Curbing the effects of mental retardation is not the only benefit men can have from supplemented carnitine. Carnitine has also showed to be very effective in treating male infertility. One of the most common causes of male infertility is decreased sperm motility the medical name of which is asthenozoospermia. In a blind study of 60 men with this condition, they were separated into various groups to test the effectiveness of L-carnitine to ALC, as well as in combination compared to a placebo group. Over the course of the study, 12 pregnancies were reported. 9 were from the treatment groups. 5 were from the group taking the combination of LC and ALC, which also coincided with the overall largest increase in sperm motility from that group as well, the lowest increase from the placebo group.

Another male benefit of ALC is for those afflicted with Peyronie's disease, which is a condition where plaque develops on the erection tissue of the penis and eventually turns into fibrous tissue that creates a curved penis. In a study conducted on men with acute or early chronic Peyronie's were separated into two groups. The first was put on a treatment of Tamoxifen and the other on a regimen of ALC. Over the course of three months, the men were assessed by levels of pain, curvature, plaque size and disease progression. After three months, the two groups were compared. Both ALC and Tamoxifen significantly reduced plaque size, but only ALC significantly reduced pain, curvature and inhibited disease progression. Also, the incidence of side effects was much higher with Tamoxifen than with ALC.

Carnitine is also beneficial for those who have degenerative conditions like Type II Diabetes and HIV, not as treatments for these conditions themselves, but for some of the subsequent medical problems that are subsequently produced from them, specifically neuropathy, or nerve damage, that causes numbness and weakness, which sometimes accompany HIV, Diabetes, and also certain forms of chemotherapy. Multiple studies using ALC on each of these types of neuropathies have shown that ALC has a strong positive effect on reducing neuropathy symptoms over the course of 12 months and longer, which is quite significant since repairing nerve tissue, or even improving nerve function is often difficult, complex and often ineffective with other types of treatment. Most likely, ALC is successful because of its ability to reach the peripheral nerves in the brain and increase energy availability of the cells directly.

As you can see, the range and scale of benefits from carnitine are vast and continuously growing as more and more research into the ways the body utilizes carnitine become known. Various forms of carnitine can be beneficial with those who have:

- Mental disorders like Depression and ADHD.
- Neurological disorders like Alzheimer's and Neuropathy.
- Male Infertility
- Fatigue
- Decreased Liver and/or Kidney function
- Cardiovascular conditions like Hypertension

ALC in particular, is the form of carnitine that has demonstrated itself to be the most effective form to take as a supplement. Because of its ability to cross the infamous blood-brain barrier, it is also beneficial for people who are actually deficient in carnitine due to

various factors like an inherited genetic disorder that affects the manufacture or function of carnitine, or the natural production of ALC in the body. Supplementing ALC directly bypasses those compromised parts of the body and allows it to be immediately available to the areas where it is most needed.

As was explained earlier, carnitine is a very safe supplement. There are a few exceptions where carnitine, specifically ALC, should not be taken, such as those with particular thyroid conditions. It is important to always consult a medical professional before taking any new medications or supplements, particularly if you have an existing medical condition.

It should be obvious by now that even though this amazing amino acid is not considered 'essential', to people with various conditions it is one of the safest and most effective ways to improve overall wellbeing and experience relief.



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