# ACETYL L-CARNITINE

Ortho Molecular Products®
Because Efficacy Matters®


### *CLINICAL APPLICATIONS*

- *Supports Cognitive Function, Memory and Mood Health*
- *Promotes Cardiovascular Health*
- *Supports Nerve Health*
- *Improves Cellular Energy*

## ESSENTIAL AMINO ACIDS

### What is Acetyl L-Carnitine?

A modified form of the amino acid L-Carnitine, acetylated L-Carnitine has been shown to have distinct cognitive benefits from the non-acetylated form, namely enhancing production of the neurotransmitter acetylcholine. Acetyl L-Carnitine (ALC) benefits mood health and supports brain function. Studies have shown that ALC also supports nerve and cardiovascular health by supporting metabolism and boosting energy production within the cells' mitochondria. Each capsule of Acetyl L-Carnitine includes 500 mg of acetyl L-carnitine for maximum support.

### Overview

Acetyl L-carnitine is an ester of the trimethylated amino acid, L-carnitine, and is synthesized in the human brain, liver and kidney by the enzyme ALC transferase. Acetyl L-carnitine transports long-chain fatty acids across mitochondrial membranes into the mitochondria, where they are burned as fuel and produce cellular energy known as ATP (Adenosine Triphosphate). Acetyl L-carnitine also transports small chain fatty acids out of the mitochondria, helping to maintain coenzyme A levels crucial for maintaining the energy production cycle. In brain health, Acetyl L-carnitine plays a role in the formation of acetylcholine, a neurotransmitter (brain chemical), which is essential in learning and concentration. Research has found that ALC is particularly beneficial in cognitive health, supporting mood in the elderly and promoting nerve and cardiovascular health.[1-3]

### Cognitive Health†

Acetyl L-carnitine has multiple roles in neuro-protection.[4] ALC readily crosses the blood-brain barrier, where it stabilizes cell membranes, acts as an effective antioxidant and protects brain cells from toxic chemicals and stress-induced changes.[5-7] ALC also has been shown to enhance energy production in nerves, facilitate transport of fuel and waste products into and out of the mitochondria and support production of acetylcholine.[6-8] Several studies have demonstrated the effectiveness of ALC in improving cognitive performance using oral dosages of 1-3 g per day, with improvements noted in spatial learning tasks, timed tasks of attention, discrimination learning, and personal recognition.[9-11]

### Mood Support†

Animal studies have indicated that ALC administration may have an inhibitory effect on the body's stress response system, the hypothalamic-pituitary-adrenal (HPA) axis. ALC administration decreased HPA axis activity, resulting in a reduction of cortisol levels and a consequent improvement in mood.[12] ALC may also impair the glucocorticoid receptor processing, resulting in limited cellular effects of stress.[13] ALC has both acetylcholine-like action and an effect on serotonergic synapses. In a two month study of 24 elderly patients, ALC was found to be highly effective in supporting mood regulation.[14] In another study, 28 elderly patients (aged 70-80 years) were randomly assigned to receive, in double-blind fashion, ALC (500 mg 3 times per day) or placebo for 60 days. Compared with placebo, ALC demonstrated a significant improvement in supporting mental outlook.[15]

### Cardiovascular Health†

ALC supports cellular energy support by enhancing fatty acid transport for ATP production in the mitochondria of skeletal and heart muscle and providing protection from free-radical damage.[16] Animal studies have shown that ALC reverses the age-associated decline in cardiolipin (a key phospholipid necessary for mitochondrial energy production) in heart tissue mitochondria.[17]



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## Nerve Health†

Imbalances in carnitine metabolism have been associated with blood sugar- related nerve issues have been demonstrated in animal studies.[18] Human studies have shown ALC administration via injection resulted in decreased nerve discomfort and improved nerve function.[19,20] Additional studies have showed that ALC administration improved vibration sensation in the legs and increasing nerve regeneration along with nerve conduction velocities.[21,22]

## Directions

1 capsule per day or as recommended by your health care professional.

## Does Not Contain

Gluten, yeast, artificial colors and flavors.

## Cautions

If you are pregnant or nursing, consult your physician before taking this product.

# Supplement Facts V1

Serving Size 1 Capsule
Servings Per Container 60

| 1 capsule contains | Amount Per Serving | % Daily Value |
|---|---|---|
| Acetyl L-Carnitine Hydrochloride | 500 mg | * |

* Daily Value not established

**ID# 740060 60 Capsules**

†These statements have not been evaluated by the Food and Drug Administration. This product is not intended to diagnose, treat, cure, or prevent any disease.

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## References


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