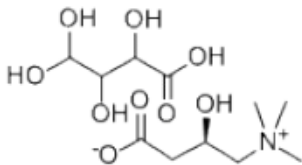


L-Carnitine 500 mg

TECHNICAL SUMMARY

L-Carnitine is a non-essential amino acid that is abundant in heart, muscle, and liver tissues. It helps to maintain metabolic health by facilitating the transfer of long-chain fatty acids across the mitochondrial membrane for cellular energy production.* It thereby assists the body in using fat for energy.* It naturally occurs in red meat and other animal source foods; some people on high-fat or vegetarian diets may have an increased need for dietary L-Carnitine. Clinical studies indicate that L-Carnitine may promote exercise performance and recovery.*

Structure formula:



Chemical name: L-Carnitine L-Tartrate.

Allergen and Additive Disclosure: Not manufactured with wheat, gluten, soy, milk, egg, fish, shellfish, or tree nut ingredients. Produced in a GMP facility that processes other ingredients containing these allergens.

Delivery Form: Veg Capsules

ROLE AS NUTRIENT/FUNCTION

L-carnitine is required for energy production.* It facilitates the transport of fatty acids across the inner mitochondrial membrane for subsequent β -oxidation, a process also known as the carnitine shuttle.* Fatty acids are the predominant substrate for energy production in skeletal and cardiac muscle at rest. In the brain, fatty acids become a key energy substrate under metabolically compromised conditions.

NATUROKINETICS®

Liberation: L-Carnitine capsules pass standard disintegration testing in water within 60 min.

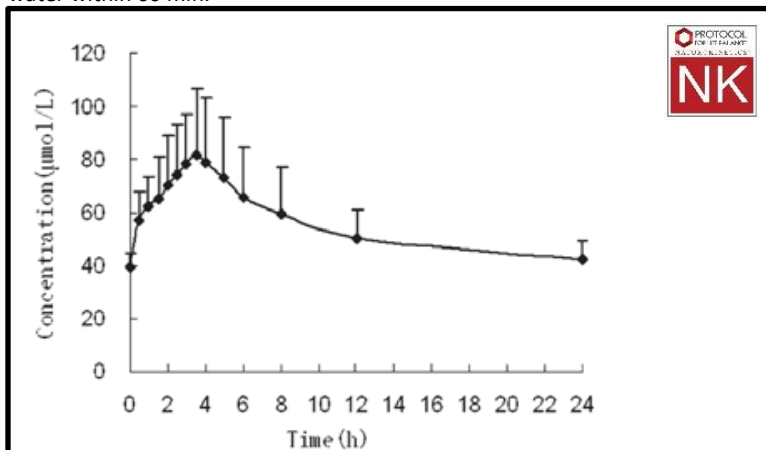


Figure 1. Mean plasma L-carnitine after single oral administration (2.0 g) in healthy adult volunteers.

Supplement Facts

Serving Size 1 Veg Capsule

Amount Per Serving

L-Carnitine (Carnipure™) (from L-Carnitine Tartrate)	500 mg*
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* Daily Value not established.

Other ingredients: Cellulose (capsule), Cellulose Powder, Magnesium Stearate (vegetable source) and Silica.

- **Transports Fatty Acids***
- **Boosts Cellular Energy***

SUGGESTED USAGE: Take 1 capsule 1 to 3 times daily, or as directed by your healthcare practitioner.

Absorption: The intestinal absorption of L-Carnitine is enabled via carnitine/organic cation transporters of the OCTN family.

- In a pharmacokinetic study in 12 healthy volunteers, administration of 2 g of L-Carnitine resulted in a T_{max} 3.4 ± 0.46 h and a half-life of 60.3 ± 15 min (Figure 1).
- In a pharmacokinetic study with 3 healthy volunteers, a single administration of 2 Veg Caps of L-Carnitine (Protocol For Life Balance®, P0072, providing 1 g of L-Carnitine from Carnitine Tartrate) resulted in an increased level of serum carnitine at 1, 3, and 6 hours post-supplementation (Figure 2).

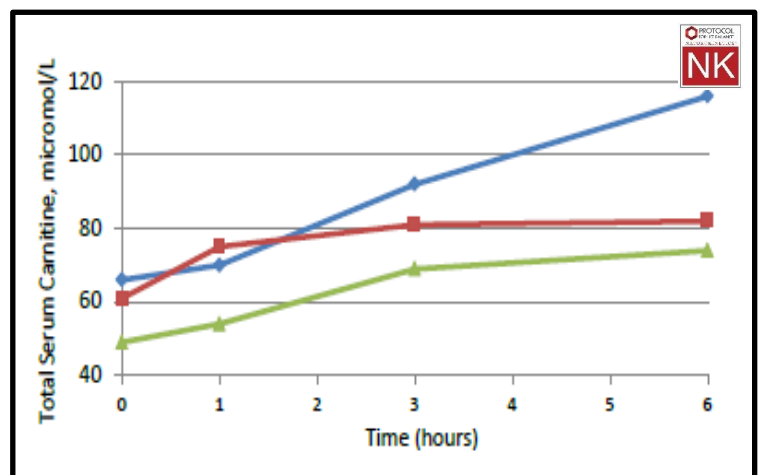


Figure 2. Effect of a Single Oral Administration of 1,000 mg of L-Carnitine (as Carnitine Tartrate, Protocol for Life Balance®, P0072) on Total Serum Carnitine Level in Healthy Adult Volunteers.

Metabolism: Orally ingested L-Carnitine enters the total body carnitine pool, which is comprised of exogenous (approx. 75%) and endogenous carnitine (free and acyl-esters). It is transported into cardiac and skeletal muscle tissue via carnitine transporters, and then intracellularly, into mitochondria. Besides acylation, there are no known metabolic pathways of carnitine degradation in humans.

*These statements have not been evaluated by the FDA. This product is not intended to diagnose, treat, cure, or prevent any disease.

Distribution: Approximately 98% of the body's carnitine is located within cardiac and skeletal muscle tissues. Carnitine crosses the blood-brain barrier where it selectively accumulates in the hypothalamus.

Elimination: Carnitine is eliminated from the body primarily via renal excretion of non-esterified carnitine and acylcarnitine esters. However, under normal conditions, only a very small fraction (usually < 5%) of filtered carnitine is excreted. Carnitine that is not absorbed in the small intestine is almost completely degraded by the flora of the large intestine.

CLINICAL VALIDATION

- **Energy Production and Muscle Function Support.*** In a double-blind randomized clinical trial with 14 healthy adult volunteers, 24 weeks of supplementation with L-Carnitine Tartrate (Carnipure™, 2 g twice a day with 80 g of simple carbohydrates per intake) resulted in a significant increase in the total muscle carnitine content (21% as compared to baseline confirmed by biopsy), while it remained unchanged in the control group (80 g of carbohydrates twice a day). When subjected to a standardized cycling exercise challenge, the carnitine group increased work output by 11% while the control showed no change.* Additionally, the carnitine group utilized 55% less muscle glycogen ($P < 0.05$) during the challenge, which is consistent with an increase in lipid utilization for energy production.*

SAFETY INFORMATION

Tolerability: L-Carnitine L-Tartrate is generally well tolerated when used orally at the recommended doses. It may cause occasional mild adverse reactions such as nausea, vomiting, gastrointestinal upset, and agitation (restlessness and motor overactivity). Safety in pregnant and nursing women has not been studied.

Contraindications: L-Carnitine L-Tartrate may interfere with thyroid metabolism and should be avoided in patients with hypothyroidism. In individuals with seizure disorders, an increase in seizure frequency and severity has been reported while taking carnitine derivatives.

INTERACTIONS

Drug Interactions: Acenocoumarol, warfarin: caution is required when administered simultaneously with L-Carnitine L-Tartrate as it might increase INR. Some drugs (anti-epileptic, anti-retroviral therapy) may decrease carnitine plasma levels.

Supplement Interactions: None known.

Interaction with Lab Tests: None known.

STORAGE

The product has a shelf-life of 2 years when stored at a room temperature without exposure to direct sunlight and excessive moisture.