HORLEYS
intelligent sports nutrition

Acetyl L-Carnitine

DIETARY SUPPLEMENT

- **Assists fat metabolism**
- **Boosts energy production**
- **Aids exercise performance**
- **Improves cognitive function**

Each Capsule Contains:
500ml Acetyl Levo-Carnitine Hydrochloride

What is it?

Carnitine is a conditionally essential nutrient which plays an important role in normal cellular metabolism. It can be obtained from our diet or can be synthesised by our bodies from the amino acids methionine and lysine. It is found predominantly in meat and animal products, with red meat being the best source. Dairy products also contain carnitine but to a lesser extent.

Acetyl-L-Carnitine (ALC) is an ester; it is an acetylised form of carnitine and is part of the total body carnitine pool. As a supplement, it has superior bioavailability to L-carnitine. Animal studies point to ALC being more readily released across the intestinal wall into circulation than L-carnitine (Rebouche, Ann N.Y. Acad. Sci. 1033:30-41).

Role of Carnitine in Fat Metabolism

Carnitine plays an important role in the oxidation of fatty acid. It is required for the transport of long chain fatty acids into cell mitochondria where they are used for fuel. It also facilitates the removal of short and medium chain fatty acids which accumulate in the mitochondria as a result of abnormal metabolism (Ames & Jiankang Ann N.Y. Acad. Sci. 1033:108-116,2004). In short, it helps turn fat into energy. Carnitine supplementation has been shown to increase fatty acid oxidation while having no effect on protein breakdown (Wutzke et al. Metabolism. Aug 2004; 53(8):1002-6). ALC can substitute for L-carnitine in fat metabolism and also has a number of other unique biological characteristics.

Acetyl-L-Carnitine for Sports People

Carnitine has a number of functions in the body that may positively affect exercise performance. It increases blood flow by enhancing fatty acid oxidation in the arterial wall and it detoxifies ammonia, which is a metabolic by-product associated with fatigue. (Kanter & Williams. Int Jnl Sports Nut.Supp Vol 5, June 1995)

The acetyl group on ALC may be utilised for production of energy in the Krebs cycle. This frees an important co-factor (CoA) which is required for the conversion of carbohydrates to energy.

While exercise does not cause carnitine deficiency, acute bouts of training may affect the nature of the carnitine content in muscles. Long term studies where carnitine was supplemented for 6 months at 2g/day showed an increase in muscle carnitine in endurance athletes and sprinters (E.Brass. Ann N.Y. Acad. Sci. 1033:67-78, 2004).

Acetyl L-Carnitine Dosage Protocol	
2 CAPSULES TWICE DAILY (2000mg)	
Have two capsules with a glass of water first thing in the morning. Take another two capsules 60 minutes prior to exercise. Alternatively, take the second dose mid-afternoon on an empty stomach.	Best results are achieved in conjunction with a diet low in saturated fats with plenty of vegetables and low G.I. carbohydrate sources. Four exercise sessions per week of 40 minutes minimum are recommended.
NOT SUITABLE FOR CHILDREN. NOT RECOMMENDED FOR PREGNANT OR BREAST FEEDING WOMEN.	

Other Benefits

Clinical studies in humans have demonstrated positive effects of ALC on brain function, cognition and memory. It has also been shown to improve symptoms of fatigue. It is thought that the acetyl group can be donated to a specific acceptor molecule which helps restore nerve function resulting in improved mental function.

Studies on rats have shown that supplementation with ALC appears to slow or reverse the effects of aging. Aging causes plasma levels of free and esterified cholesterol to increase, and supplementation with ALC has been shown to lower both of these (Ruggiero et al. Biochem Biophys Res Commun.1990 Jul 31:170(2):621-6). ALC has also been shown to decrease damage caused by oxidative stress in brain cells (Jiankang et al. Ann N.Y. Acad. Sci. 1033:117-131,2004).