Acetyl L-Carnitine

Acetyl L-Carnitine

Acetyl L-Carnitine is very popular and has been heavily marketed in the US. In the States it is used in preference to L-Carnitine mainly due to marketing..

In Australia, L Carnitine was introduced first and has been promoted, and consequently has been used more.

So are there any differences between these two apart from their local usage?

Why might we use one instead of another?

Acetyl-L-carnitine is the acetyl ester of the amino acid L-carnitine.

Acetyl-L-carnitine appears to be absorbed into the bloodstream more efficiently than L-carnitine, passes more easily through cell membranes, and is utilised more efficiently in the mitochondria of the cell.

Acetyl-L-carnitine is similar to L-Carnitine and also has some similar functions, such as being involved in the metabolism of fatty acids into energy.

Approximately 7.5%-10.2% of the body's total carnitine content is in the form of acetyl-L-carnitine.

The acetyl group that is part of acetyl l-Carnitine contributes to the production of the neurotransmitter acetylcholine, which is required for mental function.

Several double blind clinical trials suggest that acetyl l-Carnitine delays the progression of Alzheimer's Disease and enhances overall performance in some individuals with Alzheimer’s disease.

Alzheimer’s research has been done with the acetyl-L-carnitine form, rather than the L-carnitine form, of this nutrient.

Research has discovered that acetyl carnitine possesses broad neuro-protective and Neuro enhancing properties.

We will try to explain exactly what acetyl carnitine seems to be doing in the brain and some of these mechanisms that appear to set it apart from the more commonly used L-Carnitine

It is now known that Acetyl-L-Carnitine has effects on the dopaminergic system.

The decline of this neurotransmission system is most evident in Parkinson's disease patients.

Acetyl-L-Carnitine has shown the ability to improve age-related changes of the dopamine receptors, including the improved release and binding of dopamine.

One of the most important receptor systems involved with cognitive function and memory is the NMDA receptor system.

NMDA (N-Methyl-D-Aspartic acid) receptors are widely distributed in the brain.

It has been established that the density of NMDA receptors declines with age, and that even a single dose of Acetyl-L Carnitine restores to a significant degree these receptor numbers.

One of the most important and often overlooked receptor systems is that of glucocorticoids.

The hippocampus in the brain helps to regulate the production of glucocorticoids by the adrenals.

The number of glucocorticoid receptors in the hippocampus also declines significantly with age, and this is thought to result in perturbations in the hypothalamus-pituitaryadrenal (HPA) axis.

Acetyl-L-Carnitine treatment has been shown to prevent this age-related decline in receptor numbers.

Because these receptors are central to neuroendocrine aging, It appears that AcetylL-Carnitine may have substantial potential for helping to slow down neuro-endocrine aging.

One of the most exciting areas of brain research has been into functions of NerveGrowthFactor(NGF).

NGF mediates much of its effects through its own receptor system.

Aging is associated with a significant drop in the number of NGF receptors in certain brain regions as well as a decrease in the amount of NGF produced.

Acetyl-L-Carnitine has shown the ability to partially reverse both of these changes, and has even been shown to have independent stimulatory effects on neuron survival and growth.

Because NGF is important for the growth and continued maintenance of neurons, the age-related decline in NGF function is thought to be directly involved in brain aging.

The administration of NGFs are under investigation for the treatment of brain injury and damage, and Acetyl-L-Carnitine's ability to enhance NGF effects may have tremendous potential in many diseases and conditions affecting the brain and nervous system.

Cytochrome C oxidase, is an enzyme complex in mitochondria which is a vital component of cellular energy processes and is responsible for virtually all oxygen consumption in mammals.

A team of Italian scientists (Paradies, et al, 1994) recently found that the maximal activity of cytochrome C oxidase was markedly reduced (about 30%) in mitochondria from aged rats, compared to mitochondria from young rats.

This reduction in activity of this critical enzyme appears to be the one explanation for the reduction in formation of ATP (and reduced energy) with age.

After treating aged rats with Acetyl-L-Carnitine (ALC) the scientists were gratified to find that the activity of this enzyme system restored to the activity level of young rats.

Paradies, et al also found that the activity of a enzyme-adenine nucleotide translocase(ANT) decreases with age.

ANT is a carrier protein translocates (exchanges) ATP for ADP across the inner mitochondrial membrane from inside the mitochondrion, to the cytosol (outside of the mitochondrion, but inside the cell.

This decreased activity of ANT results in reduced ATP available for cellular energy production.

Again, after treatment of aged rats with acetyl-L-carnitine, the scientists found that ADP transport of rat heart mitochondria was restored to the level of young rats.

Cardiolipin(diphosphatidyl glycerol) is a phospholipid that is concentrated almost exclusively in the inner mitochondrial membrane.

When the Italians analyzed and compared the phospholipid content of the mitochondrial membranes of young and old rats, they found changes in the relative concentrations of :

(1) phosphatidyl ethanolamine,
(2) phosphatidyl inositol.
(3) phosphatidyl serine, or
(4) phosphatidyl choline.

However, they did find a 30% drop in cardiolipin concentrations. Significantly, maximal activity of cytochrome C oxidase appears to depend upon cardiolipin levels.

The scientists again found that treatment of aged rats with acetyl-L-carnitine restored cardiolipin in mitochondrial membranes to youthful levels. They also found that restoration of mitochondrial membrane cardiolipin content to youthful levels was associated with parallel restoration of the functional activity of the mitochondria themselves.

They drew the conclusion that restoration of the juvenile lipid microenvironment (i.e., restoration of inner mitochondrial membrane cardolipin levels) by acetyl-L-carnitine is the most obvious explanation of acetyl l-Carnitine's rejuvenating effect on cytochrome C oxidase activity as well.

They concluded that restoration of these functions to youthful levels should allow more efficient oxidative phosphorylation, thereby improving performance in aged animals.

If you are looking for a type of Carnitine to use for weight loss, it may not make such a difference which type you use.

We have had feedback from some people saying that they found the acetyl form more effective for fat burning, others have not noticed one being more effective than the other. The acetyl form does have a different taste to free form Carnitine, some people may or may not prefer it because of this. If you are looking for a type of Carnitine to use for weight loss, it may not make such a difference which type you use.

SUMMERY OF Acetyl-L-Carnitine

Acetyl-L-Carnitine, a powerful mind-muscle connector, is an important dietary supplement, and one of the most important life extension nutrients.

Acetyl L-Carnitine is a possibly more bioavailable form of L-Carnitine and is involved in many metabolic functions.

As an antioxidant, acetyl carnitine can protect neurones from damage caused by superoxide radicals.
Acetyl carnitine is involved in other aspects of neuronal metabolism because its molecular structure resembles the neurotransmitter acetylcholine.
Acetyl carnitine supplementation supports energy utilisation by its effects on fatty acid metabolism in the mitochondria. Acetyl-L-carnitine (ALC) has been shown to help relieve fatigue, prolong attentiveness, burn body fat, improve hand-eye coordination, enhance immune function, enhance energy metabolism in mitochondria and improve effects on fatty acid metabolism in the mitochondria and improve communication between hemispheres of the brain.
ALC is formed by acetylation of carnitine through the carnitine acetyltransferase activity.
ALC can be freely exchanged across membranes and can provide acetyl groups from which to regenerate acetyl-CoA. Approximately 7.5%-10.2% of the body's total carnitine content is in the form of acetyl-L-carnitine.

Acetyl Carnitine affects many areas of the body:
Acetyl L-Carnitine and Fat Burning Helps burn body fat through its utilisation of fatty acids for energy.

Enhances energy metabolism at the mitochondrial level (as mentioned above)

Acetyl L-Carnitine and the Aging Process As an antioxidant ALC retards some aspects of the aging.

It prevents the decline in glucocorticoid receptors and reduces lipofuscin deposits ('age spots' or fatty deposits in nerve cells that reduce cognitive function).

Retards damage to neurons and mitochondrial DNA in keeping with this theory of aging, Inhibits the increase of adipocytes in the subcutaneous tissue of the skin.

Acetyl L-Carnitine and the Nervous System ALC enhances brain function by quickly transmitting energy and prevents deterioration of the brain during stress by increasing your concentration level.
It can help slow Age Related Memory Impairment.
Improves alertness and slows deterioration in Altzheimers. Improves long and short-term memory.

Acetyl L-Carnitine and the Cardiovascular System Protects against cardiovascular disease by reducing blood triglycerides and cholesterol levels through its increased fat utilisation.

It assists treatment of cerebral insufficiency, intermittent claudication, and protects against the toxic effects of stroke and ischaemia.

Acetyl L-Carnitine and Athletic Performance Helps to reduce fatigue. Increases athletic performance.

ALC is reported to prevent the reduction of testosterone that can happen with intense training. Acetyl L-Carnitine and the Eyes ALC helps prevent Simple Sugars from causing Cross Linking (glycosylation) of the body's endogenous proteins.
In this way it can slow cataract development and damage to the optic nerve in Glaucoma. It is also useful in diabetic retinopathy.
A level metric teaspoon of Acetyl Carnitine weighs 2g.

more Analyis and Info refer **www.healyshealth.com**
http://www.healyshealth.com/#!c1supplement-analysis/c1zke
www.healyshealthstore.com