

BusinessAwareness

ISSUE 2 2008



Lonza's Carnipure™ – a natural nutrient for food applications

Comprising some products whose origins at Lonza date back to the first decades of the 20th century, Life Science Ingredients (formerly Organic Fine & Performance Chemicals) is literally Lonza's oldest division. Its history is however marked by an ongoing rejuvenation of its product offering through the addition of new products.

One of the products which were added in the course of time to the portfolio of the Nutrition Ingredients business unit is Carnipure™ (L-carnitine). At Lonza, all L-carnitine products are fermented under contract by Lonza Exclusive Synthesis in its site in Kouřim (Czech Republic). The key raw material for the fermentation process is manufactured in Lonza's multi-purpose plants in Visp (Switzerland).

L-Carnitine is offered both to the food and the feed industry, and also finds use in cosmetic products. In the following article, we will focus on the benefits of Carnipure™ supplementation for humans.

L-carnitine supplies energy to the body

L-carnitine is a natural nutrient that plays an essential role in the body's energy metabolism. It used to be known as vitamin B₇. L-carnitine transports fatty acids into the "furnaces" of the cell. Only here can energy be generated from the fatty acids. Without L-carnitine these fatty acids cannot get to the place of energy generation. L-carnitine is important in supplying energy to many organs in the body, such as the heart, muscles, liver and immune cells.

L-carnitine plays an essential role in the body for:

- producing energy from fat
- ensuring athletic endurance
- promoting recovery after exercise
- providing the heart and immune cells with energy
- preventing early onset of fatigue during exercise.

Life Science Ingredients	Exclusive Synthesis & Biopharmaceuticals		Bioscience
Nutrition Ingredients	Small Molecules	Mammalian Operations	Media
Microbial Control	Peptides	Biopharma Services	Rapid Testing
Performance Intermediates	Biochemicals	Microbial Operations	Cell Therapy
			Cell Discovery & Molecular Biology



L-carnitine is part of our daily diet. Red meat (e.g. lamb, venison and beef) is particularly rich in L-carnitine. Fish, poultry, milk and breast milk contain smaller amounts, while foods of plant origin contain very little, if any, L-carnitine. On average, we consume about 100–300 mg dietary L-carnitine every day.

Where does L-carnitine occur in our diet?

Venison, beef	100–220 mg/100 g
Pork, rabbit	20–30 mg/100 g
Poultry	6–30 mg/100 g
Fish	6–20 mg/100 g
Sausage	1–20 mg/100 g
Milk, cheese, dairy products	1–10 mg/100 g
Mushrooms	1–5 mg/100 g
Fruit, vegetables, nuts, grains	0–1 mg/ 100g



Many people can benefit from Carnipure™

Extensive clinical research has discovered that Carnipure™ has a beneficial role to play in a broad array of applications, including sports nutrition, weight management, cardiovascular health and healthy aging.

Gone are the days when L-carnitine products were solely the reserve of elite athletes and body builders. Researchers observed a decrease in the production of free radicals, less tissue damage and reduced muscle soreness after exercise in recreationally trained athletes following three weeks of Carnipure™ tartrate supplementation.

As overweight and obesity are increasing at an alarming rate in Western societies, Carnipure™ supplementation appears to play a role in promoting a healthy body weight when used as part of an overall

weight management program which includes calorie restriction and exercise. A number of studies have shown the beneficial effects of supplemental L-carnitine for weight management in both animals and humans. German researchers found that oral Carnipure™ supplementation can increase the oxidation of dietary fat in healthy adults.

Furthermore, it is widely accepted that Carnipure™ has significant cardioprotective properties as well as a favorable effect on blood lipid levels.

With a twofold increase in the world's elderly predicted between 1998 and 2025, it is not surprising that the market for anti-aging foods and supplements will see increased levels of activity and opportunity for manufacturers. Carnipure™ can be regarded as the ideal nutrient for a long life, as it comprises all the benefits that seniors need to stay fit and healthy in both mind and body.

Who should take supplementary Carnipure™?

- Athletes engaged in endurance or strength training as well as hobby athletes
- People following weight management programs
- Pregnant and breastfeeding women
- Elderly people
- Vegetarians and people who eat very little meat
- People who want to maintain and improve their health.



Between discovery and common use of L-carnitine

L-carnitine was isolated for the first time in 1905 from muscle tissue and was named from the Latin word *carnis* (meaning flesh or meat). After the chemical structure of L-carnitine had been established in 1927, Prof. Strack from the University of Leipzig in Germany published his first article about L-carnitine in 1935 and initiated decades of investigations into the physiological functions of this substance.

There was though a long time period between discovery and common usage of L-carnitine. For many decades, only small amounts of L-carnitine, extracted from meat were available for research purposes. Only dedicated research made L-carnitine available in commercial quantities in the 1980's. And it was at that time, when Lonza patented its unique process for production of L-carnitine, setting in this way the stage for a successful product in the company's nutrition portfolio.

For further information about this topic, please have a look at the websites www.carnipure.com (B2B), www.carnipure-for-you.com (B2C).



Lonza