

Carnosine: Powerful Anti-Aging Nutrient

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Carnosine is a nutrient which is a combination of two amino acids, beta-alanine and histidine. Carnosine is found in the brain, skeletal muscles, heart, and the lens of the eye, the tissues in the body which live the longest.¹ Carnosine protects these important cells so they can live as long as possible. Research suggests that carnosine may be one of the most powerful anti-aging nutrients known. According to animal and cell culture studies, carnosine slows the aging process, and rejuvenates older cells as well.²

Muscle levels of carnosine correlate with lifespan in mammals. Unfortunately, carnosine levels in muscle decline 63% from age 10 to age 70, which may account for the normal age-related decline in muscle mass and function. For optimal carnosine levels throughout life, therefore, carnosine supplementation is recommended.

Anti-Aging Effects

It's a good idea to keep your cells bathed in carnosine if you want them to live a long, healthy life, according to laboratory studies. When scientists bathed cultured human fibroblasts in carnosine, these cells lived longer and had greatly reduced signs of aging. Best of all, older cells put in the carnosine bath were rejuvenated.³ These benefits were seen only as long as cells remained in the carnosine bath. These experiments have been repeated, and each time, carnosine kept normal cells young longer,⁴ and rejuvenated older ones.⁵ Mice given carnosine throughout their life also age more slowly, showing that the effects of carnosine are system-wide in mammals.⁶

How does carnosine perform these anti-aging and rejuvenating effects? By protecting the body from one of the main events responsible for aging: glycation.

To Glycate is to Age

Glycation occurs when sugar in the bloodstream attaches to body proteins, weakening or destroying them. Think how less efficient you would be with a ball and chain on you. That is how body proteins feel when they have a glucose "dart" stuck to them. They feel sluggish and older, and just can't do their job as well. Our health depends on the integrity and fluidity of body proteins. Carnosine plays a major role protecting our proteins—and our health—through its role in blocking glycation.⁷

Keeping one's blood sugar in the low normal range is another way to slow glycation. A low normal blood sugar is associated with longer life, according to a study of over 5,000 adults.⁸ To keep blood sugar under the best possible control, exercise (emphasizing strength training), avoid junk foods and sugar, don't overeat, eat less carbohydrates, and consume blood sugar balancing nutrients such as zinc, chromium, biotin, omega 3 fats, lipoic acid and carnosine on a regular basis.

Preventing and Treating Diabetic Complications

Carnosine may be useful in treating or preventing diabetic complications such as cataracts, neuropathy and kidney failure.^{9,10}

Carnosine is Also an Antioxidant

Carnosine helps protect us from a toxic aging compound known as malondialdehyde (MDA).¹¹ MDA, if left uncontrolled, can cause damage to lipids, enzymes and DNA. Over the long term, MDA can contribute to the clogging of arteries, joint inflammation, cataract formation and overall aging.

Protecting the Brain From Strokes, Poor Circulation, Injuries, and Beta Amyloid

When there is a decrease in circulation to the brain due to stroke or injury, carnosine protects brain cells and helps promote the restoration of blood flow.¹² Research in cell culture studies also shows that carnosine can reduce or completely prevent cell damage caused by beta amyloid,¹³ the toxic protein found in the brains of Alzheimer's disease patients. Another study in animals with brain injuries showed that supplementing with carnosine reduced injury related deaths by 50%.¹⁴ Therefore, carnosine should be thought of as a specific brain protecting nutrient, especially in older adults, and in those with brain injuries or strokes.

Clinical Indications for Carnosine

- Aging
- Alzheimer's Disease
- Atherosclerosis
- Brain Injury
- Cataracts
- Diabetes
- High Blood Pressure
- Stroke
- Wound Healing

Promoting Heart Health

Carnosine also protects the heart during heart attacks, according to animal research. When blood flow to the heart is reduced, carnosine protects heart cells from damage and improves contractility of the heart.¹⁵ Carnosine also enables the heart muscle to contract more efficiently by enhancing calcium response in heart myocytes.¹⁶

Preventing and Treating Cataracts

Carnosine has been found to partially restore lens transparency in dogs with senile cataracts.¹⁷ Humans treated with carnosine eye drops experienced a marked improvement in their cataracts as well.¹⁸ Therefore, carnosine may delay the impairment of eyesight with aging, and may be useful in the treatment of cataracts.

Helping High Blood Pressure

Carnosine may be useful in lowering blood pressure, according to animal research.^{19, 20} Research also shows that carnosine levels are lower in animals that are hypertensive.²¹

Enhancing Wound Healing

Carnosine enhances wound healing,²² and may be of particular benefit to post surgical patients.²³

Possible Applications in Neuromuscular Diseases

Carnosine may play a role in preventing or slowing the progression of such neuromuscular diseases as amyotrophic lateral sclerosis (ALS), myasthenia gravis, polymyositis, drug-induced myopathies, and late-onset mitochondrial myopathy.²⁴ However, we need human clinical trials to know if carnosine can truly be of benefit in these conditions.

Carnosine is remarkably safe, with no toxicity even at dosages above 500 mg per kilogram of body weight in animal studies. Most physicians using carnosine recommend one-half to three grams of carnosine per day (500 to 3,000 mg per day). And note that although carnosine is a dipeptide, it is not broken down in the digestive tract, but is absorbed intact in humans.²⁵

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Anti-Aging Actions of Carnosine

- Blocks Glycation
- Protects Cells from Aldehydes
- Protects Cultured Brain Cells from Beta-Amyloid
- Hydrophilic Antioxidant
- Quenches Hydroxyl Radical
- Protects Against Hypochlorite
- Binds Metal Ions That Cause Tissue Damage