



Amino acids – The Building blocks of life

L-arginine

In the body, the amino acid arginine changes into nitric oxide (NO). Nitric oxide is a powerful neurotransmitter that helps blood vessels relax and also improves circulation.

Some evidence shows that arginine may help improve blood flow in the arteries of the heart. That may improve symptoms of clogged arteries, chest pain or angina, and coronary artery disease. However, there currently is no data on how the long-term use of arginine affects cholesterol or heart health.

Since arginine may help arteries relax and improve blood flow, it may also help with erectile dysfunction.

There are other potential health benefits with arginine, such as possible reduction of blood pressure in some people and improved walking distance in patients with intermittent leg cramping and weakness known as intermittent claudication.

L- arginine can improve diabetes, increase immune response, reduce anxiety, increase stamina, wound healing by increasing nitric oxide to increase blood vessel development and collagen production among other benefits.

Arginine helps maintain memory, increases fertility by improving ovarian response and increase low sperm count and also counterbalances the ageing process.

L-arginine reduces brain oedema formation and improves cortical blood flow in the early phase after a brain trauma, whereas no circulatory effects can be seen after prolonged treatment.

Arginine lowers ammonia build up and reduces brain and body inflammation reducing memory loss, brain fog , mood swings, increasing brain function. It is a useful Neuroprotective helping those suffering from age related dementia, Parkinson's disease and Huntington's disease.

Dosage 500mg per day.

L-carnitine

It plays a crucial role in the production of energy by transporting fatty acids into your cells' mitochondria.

The mitochondria act as engines within your cells, burning these fats to create usable energy. Your body can produce L-carnitine out of the amino acids lysine and methionine. For your body to produce it in sufficient amounts, you also need plenty of vitamin C.

Increases fat burning and weight loss, enhances athletic performance & endurance, prevents muscle damage and aids in muscle recovery.

In one study out of Turkey published in the *Journal of Strength and Conditioning Research*, giving professional soccer players three to four grams of L-carnitine before exercise was found to prolong the time it took to reach exhaustion.

Regulates blood sugar and increase cognitive function.

L-carnitine is also used for conditions of the heart and blood vessels including heart related chest pain, congestive heart failure (CHF), heart complications of a disease called diphtheria, high blood pressure, leg pain caused by circulation problems (intermittent claudication), and high cholesterol

Some people use L-carnitine for muscle disorders associated with certain AIDS medications, difficulty fathering a child through infertility, a brain development disorder called Rhett syndrome, chronic fatigue syndrome, diabetes, overactive thyroid, attention deficit-hyperactivity disorder (ADHD), leg ulcers, Lyme disease, and to improve athletic performance and endurance.

Dosage 630mg – 2,500mg per day in divided doses

L-carnosine

Composed of two amino acids, histidine and alanine.

Especially valuable taken with Zinc which also relieves gastric ulcers.

A potent antioxidant, which supports many age-related conditions.

The specific uses of L-carnosine include support for the skin, joints, digestive system and memory, Brain, heart health, wrinkles, Autism, Parkinson's, Alzheimer's, Dementia, degenerative conditions, anti-aging.

In addition to being important in regulating the electrical charge in excitable tissue, research has shown carnosine to be important to cellular health for other reasons. In muscles, carnosine neutralizes the extensive formation of lactic acid during high intensity exercise, and promotes recovery from exercise. This effect accelerates the working capacity of muscle exhausted by preceding exercise, and explains carnosine's popularity among bodybuilders and athletes for improving muscle function and recovery from muscle fatigue. Carnosine is also an important intracellular antioxidant.

Carnosine has been proven to scavenge reactive oxygen species (ROS) as well as protect against peroxidation of cell membrane fatty acids during oxidative stress. It has also demonstrated significant anti-aging effects related in part to its antioxidant effects, but it also prevents glycation (the attachment of sugar molecules to proteins) associated with premature aging.

Carnosine is especially critical in protecting the brain against neuro-degeneration, as well as loss of cognitive function, memory and patients with chronic encephalopathy a brain disorder

Carnosine has also been shown to rejuvenate connective tissue cells, which may explain its beneficial effects on wound healing as well as its use in trying to fight off the effects of aging in the skin, causing wrinkles and loss of elasticity. Carnosine levels in the body decline with age. By the time a person is 70 years old, carnosine levels have decreased in their body by 63 per cent. Because of all of these effects and others, carnosine is becoming well known as a longevity and anti-aging nutrient.

Dosage 2000mg per day

Children with Autism 800 – 1000mg per day

L-Glutamine

One of the most important functions of glutamine is its role in the immune system and digestive health especially leaky gut.

It is a critical fuel source for the immune cells, including white blood cells and certain intestinal cells. Increase metabolism and aids in weight and fat loss. However, its blood levels can decrease due to major injuries, burns or surgeries and therefore is important during illness and recovery.

Do not take if you have liver, kidney disease or Reye syndrome

Dosage for adults between 5000 - 15,000mg

Children over 10 years 500 -1500mg

L-lysine

High blood sugar, herpes treatment, anxiety , reduces LPA, Erectile dysfunction, impotence, penis enlargement , helps build collagen, cells, skin, helps absorb calcium, cold sores, acne, body plaque build up.

Avoid with Arginine when treating herpes

Dosage 1 -5 m per day

NAC N-acetyl cysteine

A precursor to Glutathione and also a Free radical scavenger NAC is used in disorders including addiction, compulsive and grooming disorders, schizophrenia, OCD and bipolar disorder.

Depression and mood disorders as well as many other psychiatric disorders
Prevention of drug-induced hepatotoxicity, Cirrhosis, Bronchitis, Chronic obstructive pulmonary disorders, Cystic fibrosis, HIV and AIDS, Lou Gehrig's disease, Cancer prevention, Prevention of chemo- and radiotherapy side effects. Decreases inflammation, improves immune function and all lung conditions by decreasing mucus. Sometimes people have difficulty getting rid of mucus that is abnormally sticky and thick due to lung problems, such as pneumonia, COPD, chronic bronchitis and asthmatic bronchitis, chronic emphysema, or after certain lung tests or surgery, according to Drugs.com. This makes breathing difficult.

N-acetyl cysteine is a mucolytic, which means it assists people with mucus by thinning mucus secretions. This makes the mucus more liquid so it gets through your lungs easier so you can cough it up.

Increase bone growth and improves cardiovascular health and risk of heart attack.

Lowers risk of kidney disease, Useful for Polycystic ovary syndrome, Type 2 diabetes, Aids aerobic exercise, fatigue and increases red blood cell concentration of glutathione. Also in trials, eight weeks supplementation of NAC as adjuvant to risperidone therapy in children with autism was able to reduce irritability.

Dosages vary from 500mg per day to 2,400mg per day divided into 3 to 4 doses over the day for higher amounts.

L-ornithine

Removes excess nitrogen/ ammonia from the body, wound recovery, liver function, skin, anxiety, stress, supports pregnancy and rapid growth, Chronic disease, strength and performance.

Dosage 5g x 2 day

L-Proline

An important compound responsible for tissue repair, collagen formation, arteriosclerosis prevention and blood pressure maintenance. Lowers the build-up of arterial deposits and reduces the risk of cardiovascular disease. In addition, this amino acid may also help your body build collagen, which is a primary structural tissue in connective tissue.

L-proline supplements have no known side effects. Can improve the health of your joints, the appearance of your skin and robustness of your immune system.

Vitamin C depletion can cause bad absorption so supplement when taking.

Dosage 500 – 1000mg a day.

Taurine

Taurine plays an important role in many aspects of your cardiovascular system. This amino acid helps to move key nutrients, such as potassium, magnesium and calcium, in and out of your heart's cells to improve its functioning. Low levels of taurine have been found in patients who suffered a heart attack. Epilepsy, Vasodilation, diabetes, eye health, Oxygen, cholesterol, male infertility, depression.

Not for persons diagnosed with bipolar disorder.

Dosage 2g per day

L-Tryptophan

Aging is often accompanied by a spectrum of mood disorders that include irritability, stress, and anxiety. These symptoms, along with more severe ones like sleep disorders, depression, aggressive behaviour, reduced motivation, and suicidal thinking have all been traced to depletion of brain levels of **serotonin**, a neurotransmitter that has been called the “happiness hormone.”

With the progression of age, chronic, low-grade inflammation sets the stage for degenerative disease in almost every area of the body.

while this inflammation often leads to diabetes, cancer, and heart disease, it also affects the brain by interfering with the production and release of **serotonin**.

In order for your body to manufacture serotonin, it needs a sufficient supply of the natural amino acid, **tryptophan**.

Much of what is now known about the role of serotonin in psychiatric and behavioural disturbances comes from studies of **tryptophan depletion**.

Lowering tryptophan levels triggers a corresponding drop in brain serotonin production and can impact mood, impair memory, and increase aggression. Although you can't supplement with serotonin itself, **tryptophan** is readily available as a safe, well-proven supplement.

Supplementing with tryptophan helps normalize levels of serotonin and other neurotransmitters. As a result, it can reverse many of the behavioural symptoms of age, including irritability, mood disorders, anxiety, and stress. As well as regulate behaviours that involve serotonin signalling in the brain (such as mood, sleep, and anxiety) and aggressive behaviours and also both in men and women experienced a decrease in quarrelsome behaviour along with an increase in agreeable behaviour and their perception of agreeableness in others.

Other benefits include; improved sleep, eases depression, premenstrual symptoms, improved cognitive function, OCD, SAD, lessens cold & flu stress, Endocrine regulation, pain, temperature control, eating disorders.

Dosages for children over 8 years of age 500mg per day, Adults up to 1000mg 3 x per day

L-Tyrosine

Tyrosine is an amino acid that is naturally produced in the body from another amino acid called phenylalanine and helps make several important substances, including:

Dopamine, which regulates your reward and pleasure centres.

This important brain chemical is also important for memory and motor skills.

Adrenaline and noradrenaline, the hormones are responsible for the fight-or-flight response to stressful situations. They prepare the body to “fight” or “flee” from a perceived attack or harm.

Thyroid hormones, which are produced by the thyroid gland and primarily responsible for regulating metabolism.

Melanin, the pigment gives your skin, hair and eyes their colour. Dark-skinned people have more melanin in their skin than light-skinned people. Tyrosine supplements are nootropics and adaptogens that help with performance during times of stress. Many people find that it helps significantly with fatigue from stress, memory, Parkinson's, mood, stress, alertness, attention, focus, performance, cognitive flexibility and sleep deprivation.

Dosage 1 -2 g daily/ 100mg - 250mg

L-Valine

The most common uses of L-valine in health supplements relates to its role in muscle synthesis and maintenance. Valine helps stimulate the central nervous system, and is needed for proper mental functioning.

Additional uses of L-valine include stress management, growth rate in children and support of the immune system. Used to regulate the level of nitrogen.

Valine helps prevent the breakdown of muscle by supplying the muscles with extra glucose for energy production during intense physical activity. **Valine** also helps remove potentially toxic excess nitrogen from the liver, and is able to transport nitrogen to other tissues in the body as needed. Valine may help treat liver and gallbladder disease, as well as damage to these organs caused by alcoholism and drug abuse. Valine may help treat or even reverse hepatic encephalopathy, or alcohol-related brain damage.

Improves weight loss & Muscle mass, forms the myelin sheaths that cover nerve cells.

Dosage 2-5g per day

Other important nutrients

Inositol/ B8

Inositol works by helping the body use insulin. Insulin is a hormone made by the pancreas and released into the bloodstream. Insulin allows our cells to take in glucose (sugar) and produce energy.

Inositol functions as a secondary messenger for serotonin and dopamine, neurotransmitters that send signals back and forth between the brain and other systems in the body. Low levels of inositol in the body may disrupt this signaling, possibly resulting in mood disorders and impaired mental health. lowered blood pressure, blood sugar, triglycerides, and total cholesterol, and increased HDL cholesterol, in postmenopausal women with metabolic syndrome. Prevents gestational diabetes and excessive weight gain during pregnancy (67% lower risk).

There are nine forms of inositol overall. Specifically, myo-inositol (MYO) and d-chiro-inositol (DCI) are two forms that have been studied for their abilities, especially towards women with polycystic ovary syndrome (PCOS) Inositol decreases testosterone levels and promotes regular menstruation and ovulation in women with PCOS and therefore Improves Reproductive health and fertility

Studies have also shown that inositol reduces triglyceride levels, increases HDL ("good") cholesterol, lowers bad cholesterol and decreases blood pressure.

Useful for insomnia, psoriasis, diabetic nerve pain, ADHD, Autism, Alzheimer's and PMS

Inositol is needed to support the proper function of several brain neurotransmitters, including serotonin, which is needed to avoid mood disorders. Useful for panic disorder relief, Schizophrenia, depression, anxiety and OCD.

Dosage 1-18g per day divided into smaller doses

Choline Bitartrate

Related to the B vitamins and its absorbency, such as folate and B.

Choline plays many essential roles in the body, notably, it is needed for the synthesis of acetylcholine, a key neurotransmitter, as well as lecithin, which helps maintain cell membranes, transmit nerve impulses, process **fat** and **cholesterol**, and perform other tasks.

Brain health, inflammation management, heart health and liver health, neuro muscular transmission, pregnancy, detoxing and cardio vascular health

Dosage 1-2g 2 x daily

Cdp choline -<https://www.braintropic.com/nootropics/cdp-choline/>

Alpha gpc Choline- faster acting

D-RIBOSE

D-ribose is a sugar involved in producing energy in the body and is also the structural basis of DNA and RNA.

D-ribose, together with adenine, make the [adenosine](#) molecule of adenosine triphosphate ([ATP](#)), the main storage and transportation unit of energy.

It is used as a medicine. Ribose is used to improve athletic performance and the ability to exercise by boosting muscle energy. It has also been used to improve symptoms of chronic fatigue syndrome (CFS), fibromyalgia, and coronary artery disease.

Replenishes energy reserves, improves muscular strength Lowers LDL when taken with L-cysteine, reduces oxidative stress, improves heart function and enables patients with stable heart disease to exercise for longer without pain (angina).

Improves restless leg syndrome, improves Adenylosuccinase deficiency (severe dexterity/ motor retardation)

Protects kidneys during chemo therapy, Protects the brain from cell death.

Reduces symptoms of autistic delay seizures and motor coordination.

Improves weightloss, increasing energy expenditure in combination with L-cysteine, reduces testicular toxicity caused by aluminium.

Increased **energy** an average of 45% in just 3 weeks.

5g – 15g per day divided into 3 doses for larger amounts.

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