

# Amino Acids Indicators

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Amino acids are relatively small nitrogen-containing molecules that serve as building blocks for proteins and other organic compounds in the body. Your body requires amino acids for normal metabolic function and structural integrity. A dietary deficit of even one essential amino acid results in the breakdown of body proteins to obtain the missing amino acid. Likewise, nutritional deficiencies that interfere with production of nonessential amino acids mandate the acquisition of these nutrients from your diet.

Of the 22 amino acids in nature, 20 are present in your cells. Thousands of structural proteins, enzymes, hormones, transport molecules, neurotransmitters and immune molecules are built from these same 20 amino acids, hooked together in slightly different fashions. Your body is capable of manufacturing 11 amino acids; the other 9 must be obtained from your food or supplements. And the body doesn't always make the 11 amino acids it's capable of producing, so it needs outside help.

Although you do not have to consume these amino acids on a daily basis, you cannot remain healthy if you are deprived of them for very long. If one amino acid is deficient, they all become important.

**Alanine** – (non-essential) Balances blood pressure, BMI, sugar metabolism and cholesterol, affects muscle performance.

**Arginine** – (non-essential in adults, essential in infants and young children) Enhances immune system. Detoxifies liver. Increases muscle mass and reduces body fat. Deficiencies affect insulin production, glucose tolerance, and liver lipid metabolism.

**Asparagine** – (non-essential) Relates to aging. Balances central nervous system. Brain and nervous system cells use for metabolism.

**Carnitine** – (non-essential) Works with Omega 3s in body to stabilize weight and increase energy. Supports brain function. Improves athletic function.

**Carnosine** – (non-essential) Helps to prevent skin aging and heart disease. Helps high blood pressure, kidney problems.

**Citrulline** – (non-essential) Turns into arginine after absorption and being sent to kidneys. Helps with cardiovascular health and metabolism.

**Cysteine** – (non-essential – Manufactured in the body from methionine). Helps body detoxify chemicals and heavy metals. Protects cells from free radical damage. Helps breakdown extra mucous in the lungs.

**Cystine** – (non-essential) Formed by the oxidation of cysteine. Supports normal metabolism. Affects health of skin. Protects against aging and cancer.

**Glutamine** – (non-essential) Most abundant free amino acid found in muscles. Brain fuel. Maintains acid/alkaline balance. Maintains healthy digestion. Helps arthritis, autoimmune disease, intestinal disorders, radiation damage, fatigue, impotence and much more.

**Glycine** – (non-essential) May help in cancer prevention. Protects liver and kidneys. Enhances memory.

**Histidine** – (essential) Significant in growth and repair of tissues. Protects from radiation, removes heavy metals and may help prevent AIDS.

**Isoleucine** – (essential) Needed for hemoglobin formation. Stabilizes blood sugar and energy levels. Deficiency symptoms can be similar to hypoglycemia.

**Leucine** – (essential) Protects and fuels muscle, promotes healing of bones, skin and muscles. Lowers blood sugar, aids in growth hormone production.

**Lysine** – (essential) A building block necessary for ALL protein. Helps calcium absorption and aids in production of antibodies, hormones, enzymes and collagen. For surgery recovery and sports injuries.

**Methionine** – (essential) Assists in breakdown of fats in liver, detoxifies heavy metals, protects against radiation, a powerful antioxidant. Deficiency affects aging.

**Proline** – (non-essential, derives from glutamic acid) Builds collagen. Supports healthy skin, bones, cartilage. Helps reduce cravings for sugar and alcohol, probably by providing energy for brain function.

**Ornithine** – (non-essential) Ornithine is the most potent amino acid ever studied for stimulating the production and release of Human Growth Hormone from the

pituitary gland. HGH is a powerful rejuvenator - its use has the potential to reverse aging by up to 10 to 20 years.

**Serine** – (non-essential) One of the 22 amino acids that are part of the standard human genetic code. Assists brain and central nervous system function.

**Taurine** – (non-essential) Needed for maintenance and functioning of skeletal muscles. Helps blood pressure and other cardiovascular function. Removes fatty liver deposits. Increases energy.

**Threonine** – (essential) Formation of collagen and elastin, aids in liver fat metabolism, found in heart, central nervous system and skeletal muscle. Support in production of antibodies for immune system.

**Tyrosine** – (non-essential, made from phenylalanylin) Involved in the production of stress hormones. Helps with depression, ADD, ADHD, chronic fatigue and more.

**Valine** – (essential) Has a stimulant effect. Needed for muscle metabolism, tissue repair and nitrogen balance. An energy source for muscles. Restores amino acid balance.

**NAC** – N-acetyl cysteine - (non-essential, produced in liver) An amino acid and critical antioxidant that supports cellular health, detoxification and overall wellness.