

Amino Acids

Histidine - L-histidine has many vital functions within the body and is involved in the synthesis of hemoglobin, tissue repair and the strengthening of the immune system.

Phenylalanine - The amino acid tyrosine is classified as non-essential amino acid and is involved in the production of the neurotransmitters norepinephrine (noradrenaline), dopamine, and epinephrine (adrenalin). Tyrosine is also needed to produce the skin pigment melanin.

Tryptophan - Like phenylalanine, histidine and tyrosine, its structure contains an indole functional group, which means it cannot be synthesized and must be ingested as part of the diet. Foods which are high in protein, like soybeans or oats, are particularly suitable for this purpose, though peas and walnuts can also be used to ensure the daily requirement is met.

Methionine - The sulfurous α -amino acid L-methionine is an essential amino acid. The human body is not able to manufacture it by itself. That means that a constant blood serum level level therefore has to be maintained through nutrition and diet.

Threonine - L-threonine is an essential amino acid. It is important for regulating protein balance in the body. This amino acid is a precursor to serine and glycine. These are two other amino acids necessary for muscle tissue production. L-threonine supports digestive function, immune system.

Arginine - Arginine helps to increase circulation in the body. This can be very helpful for lowering blood pressure or helping with flow for sexual vitality.

Tyrosine - Tyrosine is necessary to produce the brain chemicals that assist with regulating pain sensitivity and appetite. Also, this amino acid helps the body to respond appropriately to stress. Tyrosine is also required for healthy thyroid, adrenal, and pituitary gland function.

Serine - Serine is a nonessential amino acid that the human body can make from two other amino acids, glycine and threonine. Serine is an important component of proteins in the brain, and a compound the body makes from serine, phosphatidylserine, is an important component in the myelin sheaths that protect nerve cells from chemical and mechanical injury.

Glycine - This amino acid is closely associated with the central nervous system and the digestive system. Glycine helps with the breakdown of fat by regulating the concentration of bile acids. Glycine is also required for the biosynthesis of heme. Heme is a key component of hemoglobin. Hemoglobin is essential in the maintenance of red blood cell integrity and optimal oxygen carrying capacity.

Leucine - Leucine is an essential branched chain amino acid. Leucine is important for protein synthesis and many metabolic functions; it contributes to regulation of blood-sugar levels, growth and repair of muscle and bone tissue and growth hormone production.

Glutamic Acid - Glutamic acid is an excitatory neurotransmitter. When out of balance, it can cause concentration issues. However, glutamic acid levels that are too low can impair learning.

Proline - L-proline is a non-essential amino acid manufactured mainly from ornithine, glutamine, and glutamate in the liver. Proline is one of the principal amino acids that are needed by the

body to build collagen. This is a structural protein required to make elastic fibers found in the skin, bones, ligaments and tendons. Together with lysine and vitamin C, proline is converted into hydroxyllysine and hydroxyproline to help form collagen.

Isoleucine - Isoleucine is one of the three branched chain amino acids alongside both leucine and valine. Relative to the other two BCAAs, isoleucine is intermediate for its ability to induce muscle protein synthesis (stronger than valine, but much weaker than leucine) but is able to significantly increase glucose uptake and the usage of glucose during exercise. Isoleucine does not promote glycogen synthesis, however.

Alanine - L-alanine is a non-essential amino acid and plays a crucial role as a building block of important proteins. Mostly synthesized by the muscle cells from lactic acid it is considered the most important nutrient for the amino acid metabolism in the blood together with L-Glutamine. Once synthesized L- alanine is absorbed via the liver and converted to a pyruvate. This compound is critical for the production of glucose and hence blood sugar management.

Glutamine - Glutamine plays a decisive role in keeping a balanced acid-base ratio. Thanks to glutamine, toxic ammonia is separated off in the kidneys and the basic ammonia molecule is connected to acids and is excreted. A further advantage is that bicarbonate which is necessary for the neutralization of acids can be saved.

Valine - Valine is a branched-chain amino acid (BCAA) that works with the other two BCAAs, isoleucine and leucine, to promote normal growth, repair tissues, regulate blood sugar, and provide the body with energy. Valine helps stimulate the central nervous system, and is needed for proper mental functioning.

Cysteine - This makes a varied diet very important to avoid Cysteine undersupply. L-cysteine is built directly from the essential amino acid L-methionine. This makes the abundance of L-Methionine in the body a critical factor to the body's supply of L-cysteine. It is therefore sometimes counted as a semi- essential amino acid and also due to its role as a catalyst in many important metabolic cycles.

Asparagine - Asparagine is one of the principal and frequently the most abundant amino acids involved in the transport of nitrogen. Asparagine is an amino acid required by cells for the production of protein. Asparagine is an essential component of those proteins that are concerned with signaling, neuronal development and transmission across nerve endings. Asparagine is essential to all living cells for the production of many proteins. Cells can either internally produce asparagine or they can absorb asparagine from outside the cell, as it is obtained from a person's diet and made available through the bloodstream to all cells in the body. L-asparagine is an amino acid involved in the metabolic control of cell functions in nerve and brain tissue.

Aspartic Acid - Aspartic acid, also known as L-aspartate, is thought to help promote a robust metabolism, and is sometimes used to treat fatigue and depression.