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## **Amino Acids**

Good nutrition requires a daily supply of amino acids in your diet. There are many foods that contain a variety of *essential* and *non-essential* amino acids that play crucial roles in metabolizing nutrients, building muscle tissue, and protecting the body against disease. Amino acids and proteins are the building blocks of life.

Amino acids are left in the body when proteins are digested or broken down. The human body needs a number of amino acids to break down food, grow, repair body tissue, and perform many other body functions.

### **The body creates *Non-essential* amino acids on its own.**

***Alanine*** - Alanine works to remove toxins that are released during exercise when the muscle tissue breaks down. By removing toxins the liver is able to metabolize them and eliminate them from the body. Alanine may also help to keep cholesterol levels regulated.

***Asparagine*** - Asparagine helps the nervous system maintain its equilibrium, a requirement in amino acid transformation. Asparagine regulates metabolism as it acts as a detoxifier in the system.

***Aspartic Acid*** - Aspartic acid helps to raise metabolic levels. It is at times used to fight fatigue and depression. Aspartic acid also acts as a synthesizer for other amino acids.

***Cystine*** - Cystine regarded as a more stable amino acid because it is created from the formation of two cysteine molecules. Cystine works as a dominant antioxidant and helps to form strong connective tissues. Cystine is also one of the amino acids responsible for the creation of glutathione, a vital liver detoxifier, and has been used in topical treatments to maintain youthful-looking skin.

***Glutamic acid*** - is important for learning and memory.

***Glutathione*** - Glutathione is made up of cystine, glutamine and glycine and is an amino acid that is found within all cells and affects virtually every system in the body. It has anti-aging properties, improves brain function and protects cells from oxidative stress. Glutathione may improve sperm count in males, lower blood pressure, and help in the treatment of certain types of cancer.



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**Taurine** – a free amino acid that travels through the bloodstream. Taurine is detoxifier and digestion aid. Improve brain function and athletic performance.

**Threonine** - acts as a stress reducer and skin rebuilders. A protein balancer in the body. Threonine helps to form tooth enamel, stabilize blood sugar levels and assists in healthy liver function.

**Essential amino acids come from food. The body cannot create these nine on its own.**

**Histidine** – important in the production of red and white blood cell. Histidine helps to repair body tissue. Histamine which is produced by histidine during an allergic reaction, and is responsible for sexual arousal. Histidine is also a detoxifier.

**Isoleucine** - important for ligand binding to proteins, play central role in protein stability.

**Leucine** - generally buried in folded proteins.

**Lysine** – has important structural and chemical roles in protein

**Methionine** - important for immune cell production and proper nerve function. Dietary methionine is a potent antioxidant. Important amino acid for liver's repair and rebuilding processes.

**Phenylalanine** – important in the process of making proteins

**Threonine** - promotes normal growth by helping to maintain the proper protein balance in the body. Threonine supports cardiovascular, liver, central nervous, and immune system function.

**Tryptophan** - needed for normal growth in infants and for nitrogen balance in adults.

**Valine** - Valine helps stimulate the central nervous system, and is needed for proper mental functioning. It helps prevent the breakdown of muscle by supplying the muscles with extra glucose for energy production during intense physical activity. Valine helps remove potentially toxic excess nitrogen from the liver, and is able to transport nitrogen to other tissues in the body as needed.



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**Conditional amino acids are usually not essential, except in times of illness and stress.**

**Arginine** - Arginine regulates blood pressure including improving blood flow, reducing plaque build-up, and lowering cholesterol. Dilates and expands the blood vessels in the penis and clitoris. Facilitate erections in males and genital responsiveness in females. Nitric oxide metabolism. For cardiovascular system, long term memory, and sports performance.

**Cysteine** - Cysteine works as a detoxifier in the body and performs as an antioxidant, combating free-radicals. It strengthens stomach lining and is vital to healthy hair, skin, and nails.

**Glutamine** - Glutamine is the most abundant amino acid in the bloodstream. Glutamine aids in the production of glutathione. The immune system, proper brain function, and digestion require glutamine. Studies have shown glutamine may possibly help to defeat hunger.

**Glycine** - is a glucogenic amino acid. Glycine supplies beneficial glucose the body needs for energy. It is vital for proper cell growth and function, crucial to digestive health, and makes up a large portion of collagen which helps skin retain its elasticity and healing properties.

**Ornithine** -

**Proline** - Proline helps in the regeneration of skin and helps to reduce sagging and wrinkles. Proline is a supporter of collagen and cartilage. It helps keep muscles and joints pliable.

**Serine** - Derived from glycine. Serine is essential to brain function, particularly the chemicals that determine mood and mental stability. It aids in muscle formation and immune health.

**Tyrosine** - Tyrosine supports your brain in the production of epinephrine, dopamine, L-dopa, and norepinephrine neurotransmitters. These neurotransmitters help in regulating emotions.



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*Nonessential* amino acids are available in a healthy human body and can be found in whole foods like nuts, grains, meats, fruits and vegetables, or may be added to the body through supplements.

It is advised to monitor supplement intake to avoid altering citric acid normal balance in the system which can cause liver and kidneys improper function.

It is unnecessary to eat *essential* and *nonessential* amino acids at every meal. Secure a balance of them over a day is vital.