



## The 22 Amino Acids

All 22 Amino Acids are contained in the GNLD Protein Powder, GNLD Nutrishake and GNLD GR2 shake.

There are 8 Essential Amino Acids (AA) and they are - Isoleucine, Leucine, Lysine, Methionine, Phenylalanine, Threonine, Tryptophan, Valine and for children 9 Ess. AA including Histidine.

There are 14 Non Essential Amino Acids are Alanine, Arginine, Asparagine, Aspartic Acid, Cysteine, Glutamic Acid, Glutamine, Glycine, Histidine, Proline, Serine, Tyrosine, Cystine, Hydroxyproline.

What they can do for you.

- **L-Isoleucine** - Primarily metabolized in muscle tissue, essential to the formation of haemoglobin. Should always in well balanced proportion with L-Leucine and L-Valine
- **L-Leucine** - Metabolized in muscle tissue. Promotes healing of skin and broken bones. Lowers elevated blood sugar levels. Should always be in well-balanced proportion with L-Valine and L-Isoleucine.
- **L-Lysine** - Inhibits the growth of viruses. Helps reduce the incidence of and/or prevent herpes simplex virus infection, promote better concentration, properly utilize fatty acids needed for energy production. Produces L-Carnitine, which improves, stress tolerance and fat metabolism and has an anti fatigue effect. Aids in alleviating some fertility problems. Promotes bone growth by helping to form collagen, the fibrous protein that makes up bone, cartilage and other connective tissue. Aids in the absorption of calcium.
- **L-Methionine** - helps in some cases of schizophrenia by lowering the level of histamine, which can cause the brain to relay the wrong messages. When combined with choline and folic acid (B vitamins) has been shown to offer protection against certain tumours. Lack of this AA can break down body's ability to process urine and result in oedema (Swelling due to retention of fluids in tissues) and susceptibility to infection. A deficiency has been linked to cholesterol deposits, arteriosclerosis, and hair loss. Is lipotropic, preventing excessive fat build-up in the liver. Helps prevent premature hair loss. It interacts with other body substances to detoxify harmful compounds. It is included in nutritional supplements as an anti-fatigue agent.
- **L-Phenylalanine** - Reduces hunger, suppresses the appetite, increases sexual interest, improves memory and mental alertness, alleviates depression, produces and maintains an elevated and positive mood, alertness and ambition, produces neurotransmitters which control impulse transmission between nerve cells, is involved in dopamine transmission. Acts as a natural pain killer for conditions such as whiplash, osteoarthritis, rheumatoid arthritis, lower back pain, migraines, leg and muscle cramps, postoperative pain and neuralgia.
- **L-Threonine** - Is lipotropic, preventing fatty build-up in the liver. Glycogenic (energy storage source of glucose by the liver and muscles). Essential to normal growth. Generally low in vegetarian diets. Builds up the immune system, producing immunoglobulins and antibodies. It is an important constituent of collagen and elastin proteins. Other Non-essential Amino acids that are derivatives are L-Carnitine, L-Citrulline, and Taurine. L-



Carnitine good for weight loss and for energy, burns body fat into energy.

- **L-Tryptophan** - Used by the brain to produce the neurotransmitter secretion, resulting in a calming effect. Thus helps induce natural sleep, used in treatment of insomnia, stress, anxiety and depression. Reduces pain sensitivity, used in treatment of migraines, acts a non-drug anti-depressant, aids in reducing anxiety and tension. Helps relieve some symptoms of alcohol related body chemistry disorder and aids in control of alcoholism.
- **L-Valine** - Glycogenic (Energy storage source of glucose by the liver and the muscles) Metabolized in muscle. Should always be in well balanced proportion with L-Leucine and L-Isoleucine. Used in the treatment of severe amino acid deficiencies caused by addictions.

### The 14 Non Essential Amino Acids

- **L-Alanine** - Used as body fuel by tissues of the brain, nervous system, and muscle. Important in converting energy to stored energy in the body's Krebs's energy cycle. Glycogenic (energy storage source of glucose by the liver and muscles). Important nitrogen quality for post-injury states. Builds up the immune system, producing immunoglobulins and antibodies. Metabolizes sugars and organic acids.
- **L-Arginine** - Increases sperm count in males (spermatogenesis), aids in immune response and healing of wounds, helps metabolise stores body fat and tone up muscle tissue. Any physical trauma increases your need for arginine. Plays an important role in post- injury problems such as weight changes, nitrogen balance and tissue healing. Indispensable for optimum growth, important for muscle metabolism, acts as a vehicle for transport, storage and excretion of nitrogen. Increases muscle mass while decreasing the amount of body fat. Combats mental and physical fatigue. Used in treatment of liver (hepatic) disorders. Promotes detoxification of Ammonia, which is poisonous to all living cells.
- **L-Asparagine** - Helps recovery from fatigue stimulates the immune system therefore beneficial in the presence of any illness, disease, traumatic injury or wound. Detoxifies ammonia, which is poisonous to living cells. Metabolises to L-Arginine.
- **L-Aspartic Acid** – Aids in the expulsion of harmful ammonia from the body, in so doing by disposing of ammonia helps to protect the nervous system. It helps in increased resistance to fatigue. Salts of Aspartic Acid increases stamina and endurance (important for athletes). Aspartic Acid is involved in the formations of RNA and DNA the chemical bases of heredity and carriers of genetic information. Protects the liver and promotes normal cell function. This AA builds up the immune system, producing immunoglobulins and antibodies.
- **L-Cysteine** - Found to increase hair growth by as much as 100%. Effective in preventing not only hangovers but also brain and liver damage from alcohol. Helps prevent damages from the ill effects of cigarette smoke. Detoxifies many harmful chemicals. Helpful in the treatment of rheumatoid arthritis. Promotes healing and boosts the immune system.
- **L-Glutamic Acid** - Serves as a brain fuel serving as an excitatory transmitter, important for brain metabolism, improves the intelligence (even IQ of mentally deficient children). L-Glutamine transports potassium across the blood brain barrier. Combines to form L-glutamine and in the process picks up ammonia radicals, this is the only method the brain has of detoxifying ammonia. It is instrumental in the metabolism of other amino acids.

This AA metabolizes sugars and fats and increases the blood sugar level - used in the treatment of hypoglycaemia. Helps in the control of alcoholism, shortens the healing time for ulcers, alleviates fatigue, and alleviates depression and impotence. Successfully used in the treatment of schizophrenia and senility.



- **L-Glutamine** - Sustains mental ability and is involved with brain metabolism. Along with L-Glutamic Acid is used as a brain fuel. It is used in the treatment of alcoholism, can protect against alcohol poisoning. L-Glutamine has been successfully used in the treatment of schizophrenia and senility.
- **L-Glycine** - Used in the treatment of Hypoglycaemia - Glycine stimulates the release of glucagon, which mobilizes glycogen, which is then released into the blood as glucose from the liver. This AA builds the immune system, producing immunoglobulins and antibodies. It also acts as a nitrogen pool for the synthesis of non-essential amino acids. Used as a treatment for gastric hyper-acidity (included in many gastric antacid drugs). Used to treat certain types of Acidosis (low pH of the blood) caused by a Leucine imbalance which results in an offensive body and breath odour. Of special value as a source of creatine, which is essential for muscle function, breaking down glycogen and freeing energy.
- **L-Histidine** - Is used in the treatment of allergic diseases. It is also used in treatment of Rheumatoid Arthritis, effective in the treatment of ulcers of the digestive organs. Important in the production of red and white blood cells - used in the treatment of anaemia.
- **L-Proline** - is extremely important for the proper function of joints and tendons, as well as good heart muscles. Proline improves skin texture by aiding in the production of collagen and reducing the loss of collagen through the aging process. It also helps in the healing of cartilage and the strengthening of joints, tendons and heart muscle. It works with Vitamin C to promote healthy connective tissue. Proline is obtained primarily from meat sources.
- **L-Serine** - Glycogenic (energy storage source of glucose of the liver and muscles.). Serine builds up the immune system, producing immunoglobulins and antibodies.
- **L-Tyrosine** - Plays an important role in the function of the adrenal, pituitary and thyroid glands. Tyrosine generates red and white blood cells. It is a high-ranking neuro- transmitter, stimulates and modifies brain activity. Tyrosine elevates mood. It is used in treatment of anxiety, depression and insomnia. Tyrosine produces melanin, the skin and hair pigment. It produces Norepinephrine, an appetite inhibitory neurotransmitter that suppresses the appetite. It stimulates the release of growth hormone, which causes muscle growth and reduces body fat. Tyrosine has been used to control medication-resistant depression and anxiety and has also helped cocaine addicts conquer their habit by helping to avert depression, fatigue and extreme irritability that accompany withdrawal.
- **L-Cystine** - Cystine is essential for the formation of skin and hair and improves hair growth by 100%... It helps to detoxify the system of many harmful chemicals, helps to protect the body from harmful metals as well as destructive free radicals that are from smoking and drinking. It is helpful in the treatment of rheumatoid arthritis. Cystine stimulates white blood cell activity in the immune system necessary for the resistance to disease. Cystine offers a degree of protection against X-ray and nuclear radiation. Cystine has proved effective in preventing hangovers and liver and brain damage from the alcohol. Promotes healing and boosts Immune system. Cystine promotes recovery from surgical operations and burns. Used in the treatment of respiratory disorders such as chronic bronchitis.
- **L-Hydroxyproline** - an amino acid is a major component of collagen, the protein that strengthens ligaments and tendons and provides skin elasticity. The human body makes Proline, which it converts to Hydroxyproline, but it requires vitamin C to complete the process. A lack of vitamin C in the diet can cause Hydroxyproline deficiency, producing the skin lesions typical of the disease scurvy. Hydroxyproline can be synthesized in the body, making it a non-essential amino acid and is used nearly exclusively in structural proteins including collagen and connective tissues - It promotes healing.



- **L-Ornithine** – L-Ornithine - Helps build up the immune system, promotes liver functions and regeneration. Important in the formation of urea, detoxifying ammonia, this is poisonous to living cells! Ornithine helps to prompt the release of growth hormone, which promotes the metabolism of excess body fat. This effect is enhanced if ornithine is combined with arginine and Carnitine. This amino acid also detoxifies ammonia and aids in liver regeneration. A high concentration of ornithine can be found in the skin and connective tissue, making it useful for promoting healing and repairing damaged tissues. Ornithine is synthesized in the body from arginine, and in turn serves as the precursor of Citrulline, Proline and Glutamic acid.
- **L-arginine and L-ornithine** are the 2 amino acids involved in the release of Human Growth Hormone - what HGH can do for you.
  - Help burn fat and convert it into energy and muscle. Helps you to slim down and shape up whilst you sleep, acts as a mobiliser of fat helping you to not only look trimmer but to have more energy as well.
  - Ornithine stimulates insulin secretion and helps insulin work as an anabolic (Muscle Building) hormone
  - Improve resistance to disease. - Accelerate wound healing. - Aid in tissue repair.
  - Strengthen connective tissue for healthier tendons and ligaments.
  - Enhance protein synthesis for muscle growth.
  - Reduce Urea levels in blood and urine.

