

# Nutrition

Nutrients are substances necessary for proper bodily function. Some are required in large quantities (macronutrients) and some are required in small quantities (micronutrients). There are 4 types of macronutrients: Proteins, Carbohydrates, Fats and Water and two types of micronutrients: Vitamins and Minerals.

## Macronutrients

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### Proteins

Proteins are the basic structure of all living cells. Proteins are used in making hormones, blood plasma transport systems, and enzymes. The basic building blocks of proteins are called amino acids. There are two types of proteins complete and incomplete. Amino acids are categorized as essential and non-essential. Of the twenty amino acids that have been identified, nine are considered essential amino acids those that are not manufactured by the body, these must come from dietary intake. The body can manufacture the non-essential amino acids from the by-products of carbohydrate metabolism. Amino Acids are crucial for proper Central Nervous System (CNS) function.

### Non-Essential Amino Acids

- **Alanine** - provides energy for muscle tissue, brain and CNS; aids antibody production to enhance the immune system; helps metabolize sugars and organic acids.
- **Arginine** - improves immune response to bacteria, viruses and tumor cells; promotes healing and liver regeneration; aids the release of growth hormones for muscle growth and tissue repair.
- **Aspartic Acid (Asparagine)** - aids in the excretion of ammonia, which is toxic to the CNS; may increase resistance to fatigue and increase endurance.
- **Cysteine** - antioxidant protection against radiation and pollution; slows the aging process; deactivates free radicals; neutralizes toxins; aids in protein synthesis. Crucial for the skin development aiding in the recovery from burns and surgical procedures. Hair and skin are comprised of 10-14% Cysteine.
- **Glycine** - aids in the release of oxygen during the cell-making process. Important for hormone production in strengthening the immune system.

- **Glutamic Acid (Glutamine)** - improves mental capabilities; helps healing of ulcers; reduces fatigue; helps control alcoholism, schizophrenia and sugar cravings.
- **Taurine** - stabilizes membranes excitability in the control of epileptic seizures. Controls biochemical changes responsible for the aging process; aids in the excretion of free radicals.
- **Proline** - promotes proper joint and tendon function; strengthens heart muscles.
- **Serine** - storage source of glucose for the liver and muscles, antibody production enhances the immune system, synthesizes fatty acid covering around nerve fibers (insulator).

**Tyrosine** - transmission of nerve impulses to the brain; fights depression; improves memory and mental alertness; promotes the proper function of the adrenal, thyroid and pituitary glands.

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