Glutamine is the most abundant free amino acid found in the muscles of the body. Because it can readily pass the blood-brain barrier, it is known as brain fuel. In the brain, glutamine is converted into glutamic acid, which is essential for cerebral function, and vice versa. It also increases the amount of GABA, which is needed to sustain proper brain function and mental activity. It assists in maintaining the proper acid/alkaline balance in the body, and is the basis of the building blocks for the synthesis of RNA and DNA. It promotes mental ability and the maintenance of a healthy digestive tract.

When an amino acid is broken down, nitrogen is released. The body needs nitrogen, but free nitrogen can form ammonia, which is especially toxic to brain tissue. The liver can convert nitrogen into urea, which is excreted in the urine, or nitrogen may attach itself to glutamic acid. This process forms glutamine. Glutamine is unique among the amino acids in that each molecule contains not one nitrogen atom but two. Thus, its creation helps to clear ammonia from the tissues, especially brain tissue, and it can transfer nitrogen from one place to another.

Glutamine is found in large amounts in the muscles and is readily available when needed for the synthesis of skeletal muscle proteins. Because amino acids help to build and maintain muscle, supplemental glutamine is useful for dieters and bodybuilders. More important, it helps to prevent the kind of muscle wasting that can accompany prolonged bed rest or diseases such as cancer and AIDS. This is because stress and injury cause the muscles to release glutamine into the bloodstream. In addition, glutamine helps strengthen the lining of the intestinal tract, so that nutrients are more efficiently absorbed. This is important for wasting diseases such as cancer.

In fact, during times of stress, as much as one third of the glutamine present in the muscles may be released. As a result, stress and/or illness can lead to the loss of skeletal muscle. If enough glutamine is available, however, this can be prevented.

Supplemental L-glutamine can be helpful in the treatment of arthritis, autoimmune diseases, fibrosis, intestinal disorders, peptic ulcers, connective tissue diseases such as polymyositis and scleroderma, and tissue damage due to radiation treatment for cancer. L-glutamine can enhance mental functioning and has been used to treat a range of problems, including

developmental disabilities, epilepsy, fatigue, impotence, depression, schizophrenia, and senility.

It preserves glutathione in the liver and protects that organ from the effects of acetaminophen overdose. It enhances antioxidant protection. L-glutamine decreases sugar cravings and the desire for alcohol, and is useful for recovering alcoholics.

Many plant and animal substances contain glutamine, but cooking easily destroys it. If eaten raw, spinach and parsley are good sources. Supplemental glutamine must be kept absolutely dry or the powder will degrade into ammonia and pyroglutamic acid. Glutamine should not be taken by persons with cirrhosis of the liver, kidney problems, Reye's syndrome, or any type of disorder that can result in an accumulation of ammonia in the blood. For such individuals, taking supplemental glutamine may only cause further damage to the body. Be aware that although the names sound similar, glutamine, glutamic acid, glutathione, gluten, and monosodium glutamate are all different substances.