

GLUTAMINE PLUS™**GLUTAMINE & MAGIC FIBER™ CLR**by Dr. Larry J. Milam, DHM, Ph.D.
Clinical Nutritionist**PRODUCT DESCRIPTION**

Glutamine Plus™ is a pure L-Glutamine mixed with Magic Fiber CLR™ (A source of soluble fiber). Each serving of one rounded teaspoon contains 2000 mg of Glutamine and 1250 mg of Magic Fiber™ CLR. As this product has virtually no taste and mixes readily with water, we recommend mixing with water only. Do not mix with highly acidic sodas.

WHAT IS GLUTAMINE?

- *Glutamine is the most common amino acid in the body.
- *Glutamine is primary fuel for the entire immune system.
- *Glutamine is a nutrient for the cells that line the gastrointestinal tract.
- *Glutamine is a key to the metabolism and maintenance of muscle.
- *Inadequate supplies of Glutamine are responsible for the wasting of muscle and for the weakness that accompanies a fever or other stressful illness.
- *Glutamine is essential for deoxyribonucleic acid (DNA) synthesis, cell division, and cell growth, which are necessary for wound healing and tissue repair.
- *Glutamine is important for neutralizing toxins in the body and helps control fluid loss from the intestines.
- *Glutamine is involved with the multiplication of selected white cells, which strengthens the body's defense system and helps other immune cells kill bacteria.
- *Glutamine maintains and supports glutathione, an important antioxidant.
- *Glutamine contains two nitrogen atoms. This extra nitrogen may be the factor that makes it unique. It's often called a "nitrogen shuttle", a substance that picks up and drops off nitrogen around the body. By shuttling this nitrogen, it cleans poisonous wastes like ammonia, adding a nitrogen atom to make DNA and building muscle.

GLUTAMINE PLUS™ USAGE**POST SURGERY PATIENTS**

When individuals undergo an operation (such as removal of the gallbladder), There is an increased breakdown of skeletal muscle, a release of amino acids into the bloodstream, and a fall of glutamine levels in the skeletal muscles.

When glutamine is used, the muscle breakdown rates are greatly diminished.

ATHLETES AND BODYBUILDERS

Strenuous exercise may cause loss of muscle mass due to metabolic reactions that create a surplus of acid (acidosis). This excessive acid, in turn, triggers a breakdown of muscle and the release of glutamine, allowing glutamine to donate an essential molecule to neutralize the positive charge of the acid in the kidneys.

Supplemental glutamine can prevent acidosis and reduce muscle breakdown.

GLUTAMINE PLUS™ USAGE**INTESTINAL (DIGESTIVE SYSTEM) REPAIR**

The cells that line the gastrointestinal tract take lots of abuse from food breakdown, the release of hydrochloric acid in the stomach and the development of waste products and toxins. The lining of the small intestine is known as the mucosa. The mucosa is composed of fingerlike projections called villi, where the actual intestinal cells, the enterocytes, are located. The enterocytes are some of the most rapidly multiplying cells in the body. The primary nutrient for these cells is glutamine.

During illness, the demand for energy by the intestines increases dramatically. This demand causes muscle breakdown into amino acids. Through this action and the enzyme glutamine synthetase, glutamine is formed. When the normal supply of glutamine is lowered, the components of the mucosal barrier falter. When the barrier (mucosal) fails and becomes permeable, or "leaky", this allows organisms and toxins to escape through the intestinal wall. This passage through the gut wall is known as *bacterial translocating*. If the immunological cells do not capture these bacteria, the bacteria are picked up by the circulatory system and transported throughout the body.

LONG PERIODS OF STRESS AND NOT EATING

There are occasions when people are unable to eat for extremely long periods of time because of an illness such as inflammatory bowel disease, chemotherapy, or radiation. Under these conditions, the ability of the intestine to maintain itself starts to wane. Because demand exceeds supply, the level of Glutamine in the blood begins to fail. Cell replication becomes much slower, muscle is significantly wasted, and the intestines severely atrophy. Recovery time is prolonged.

RADIATION AND CANCER THERAPIES

Chemotherapy works against cancerous growth by destroying rapidly growing cells. However, chemotherapy attracts and destroys not only cancer cells but also cells of the intestinal tract, which are the fastest growing cells in the body. This accounts for nausea, vomiting, and diarrhea suffered by people who are being treated for cancer. Radiation has a similar effect and is toxic to the gastrointestinal tract, especially at high doses. Animal studies have shown that Glutamine helps protect the intestinal lining during treatment. (4 to 8 grams per day in divided dose.)

STOMACH ULCERS AND DIARRHEA

Japanese scientists have discovered that Glutamine is an effective anti-ulcer agent for the stomach. In other studies, they discovered they could enhance the healing of peptic stomach ulcers by giving test subjects oral Glutamine.

Glutamine has also been found to be important in diminishing the loss of electrolytes and water from the intestines during diarrhea. Glutamine could help enhance water and salt intake into the body and could help lessen diarrhea. Glutamine has also been found to be an important nutrient for the large bowel (the colon) and can provide fuel to maintain the normal function of the mucosal lining cells of the colon.

GLUTAMINE PLUS™

GLUTAMINE & MAGIC FIBER™ CLR

GLUTAMINE PLUS™ USAGE

INFLAMMATORY BOWEL DISEASE, COLITIS, CROHN'S AND SHORT BOWEL SYNDROME:

Studies have shown that these groups of people may benefit from glutamine supplementation along with special high fiber, low fat diets.

AIDS

The AIDS virus may directly the cells of the gastrointestinal mucosa, causing secondary infections from other bacteria and diarrhea with the loss of lots of water from the body. These individuals may need very high doses of glutamine (up to 40 grams) per 24 hours. Of course, any supplementation should be under the care of their doctor.

LIVER SUPPORT

The liver is both a glutamine producer and a glutamine consumer. The liver rids itself of excess nitrogen in the form of ammonia in two ways: 1) It uses the nitrogen to form urea and, ultimately, excretes it as urine. 2) It also attaches the nitrogen to the amino acid glutamate to form glutamine. Glutamate is combined with cysteine and glycine to manufacture glutathione, the body's number one antioxidant.

FATTY LIVERS

When there is an over abundance of calories (such as high carbohydrate diets), or when there is partial fasting and rapid liberation of fat from the body's fat stores (as occurs with severely restricted weight loss diets), the liver becomes choked with fat. Such a liver is called a *fatty liver*. The liver has taken up too much fat and cannot get rid of it. It becomes enlarged and shows signs of dysfunction that show up when liver tests are performed. Scientists have discovered that the formation of a fatty liver can be prevented by the addition of glutamine to the diet.

AUTO-IMMUNE DISEASES

People with an auto-immune disease, like rheumatoid arthritis, have a 50% greater production of cytokines in circulating cells of their blood than do people without an auto-immune disease. They often have chronic pain at the site of inflammation and increased muscle wasting from cytokine production or from the steroids used to treat their conditions.

It has been shown that glutamine, by contributing to the production of glutathione, is able to stop the production of cytokines when they are being synthesized in amounts harmful to the body.

OTHER USES

Glutamine can protect the stomach somewhat from gastritis caused by NSAIDS. Small quantities of glutamine may help individuals with depression (250 to 1000 mg). Glutamine may have some potential for curbing addiction to alcohol. (Studies done at 1000 mg per day).

Glutamine is being used at the Brigham and Women's Hospital in Boston to help heal mouth sores and oral mycositis (inflammation of the skin of the mouth), and ease the pain of cancer. The general recommendation is approximately 5,000 mg with water. Patients swish the solution around in the mouth for a few seconds and then swallow.

HOW TO USE GLUTAMINE PLUS™

There is no single recommended dose of glutamine. Generally 4 to 8 g /day are used in divided doses for people under increased stress because of dieting, heavy exercise, flu, diarrhea, upper gastrointestinal problems, such as stomach ulcers, or for intestinal bowel problems.

Glutamine should be taken with room temperature water, as heat destroys glutamine. Glutamine can also be taken with food at room temperature, but not mixed with highly acidic products like vinegar. (Applesauce is okay.)

RESTRICTIONS & CONTRAINDICATIONS

Some people should not take glutamine. It should probably not be used by patients with chronic renal failure (kidney disease). Patients with liver disease, especially severe liver disease, should not use glutamine without their doctor's recommendation. Patients with severe cirrhosis of the liver, Reye's Syndrome, or certain other metabolic disorders should not use Glutamine.

Note: Glutamine is being given to cancer patients, but should be done so under closely supervised conditions by their doctor.

Note: For people prone to constipation, glutamine should be taken with soluble fiber (oat bran, apple pectin, high fiber cereals, or Magic Fiber™ CLR). Soluble fiber prevents water from being reabsorbed into the body from the colon and rectum, counterbalancing the effects that glutamine has on transporting water. Glutamine Plus™ contains Magic Fiber™ CLR in every serving.

General Note: For every 1 g of Glutamine ingested, 1 g of protein intake may be subtracted from your diet. Protein foods include meat, chicken, fish, eggs, cheese, milk, and yogurt. Generally, elderly people should not take the same quantity of glutamine as younger people. Reduce the amount appropriately.

SAFETY

Glutamine has been used up to .75 g per kilogram of body weight. This is the equivalent of 68 g (68,000 mgs) for a 150 lb. person. No adverse effects have been noted. High levels like this should always be done under a doctor's supervision

Glutamine Plus™

140 grams powder--43 servings per bottle

One serving contains (1 rounded tsp):

L-Glutamine 2000mg

Magic Fiber™ CLR 1250 mg

Item# 2067

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