L-Glutamine

Cell Metabolism Support*

Available in 85 servings

Discussion

Glutamine is the most abundant free amino acid in the body and is an energy substrate for most cells—especially enterocytes (intestinal epithelial cells) and immune cells. It is also an essential component for numerous metabolic functions, including acid-base (pH) homeostasis; nitrogen supply; neurotransmitter production; and synthesis of glutathione, glucose, proteins, and nucleic acids.[1,2] Glutamine is primarily synthesized and stored in skeletal muscle. It is considered a conditionally essential amino acid because, under normal circumstances, the body can manufacture enough to sustain physiological demands. However, under metabolic stress—such as illness/disease, injury, infection, surgery, chemotherapy, prolonged exercise, or environmental stress—glutamine is released from body stores into the bloodstream and transported to tissues in deficit. Increased demands make exogenous glutamine sources (food, supplements) a necessity.*[2]

Support During and Recovery After Stress States During stress states, the body's glutamine requirement exceeds supply, severely reducing both plasma and skeletal muscle pools of free glutamine.[1] Without adequate glutamine to meet the needs of the intestine, immune system, and vital organs, a negative nitrogen balance and catabolism can result.[3] Nitrogen is necessary to repair wounds and keep the vital organs functioning; approximately one third of this nitrogen comes from glutamine. Adequate nutrition, which includes glutamine, can help spare host energy reserves and impede recovery complications.[4] In fact, it has been recommended that patients preparing for elective surgery ready themselves nutritionally, in part through glutamine supplementation, to optimize recovery.[5] Research also suggests glutamine may help diminish risks associated with conventional therapeutics—such as high-dose chemotherapy and radiation—by supporting mucosal integrity, immune competence, and glutathione biosynthesis.*[4,6,7]

Intestinal Health and Barrier Function The greatest amount of glutamine is used by enterocytes. As their preferred fuel source, glutamine is necessary for their maintenance and healthy turnover.

Clinical Applications

- Supports Glutamine Replenishment During and After Metabolic Stress*
- Supports Intestinal Health and Barrier Integrity*
- Supports Healthy Immune Function*
- Supports Muscle Mass Retention*
- Supports Increased Glutathione Synthesis*

L-Glutamine *is a conditionally essential amino acid required for many processes, including cell metabolism, immune function, and glutathione synthesis. Particularly when under stress, the body may not make enough glutamine on its own, and glutamine becomes a limiting factor that slows down these processes. During times of illness, recovery from surgery, regularly engaging in intense exercise, or exposure to environmental stressors, supplementing with high-quality glutamine may support immune and gut health, intestinal barrier integrity, retention of lean mass, and endogenous glutathione synthesis.**

Supplementation may therefore enhance mucosal health.[1,8] A healthy intestinal mucosa not only supports optimal nutrient absorption, but it also supports mucosal immune function and provides a barrier between bacteria and their products in the intestines and the bloodstream.[1,9,10] Disruption of intestinal barrier function can lead to decreases in mucosal immune activity and increases in escaping toxins and bacteria, resulting in infections, illness, allergic reactions, skin conditions, and more. In various experimental models, glutamine administration has been shown to reduce epithelial cell death and preserve or improve barrier function.[11-13] For instance, in an animal model of chemotherapy-induced intestinal damage, glutamine decreased the severity of intestinal injury perhaps through improved intestinal cell turnover and enhanced antioxidant activity.*[14]

Muscle Tissue Preservation Of the 20 amino acids required for protein synthesis, glutamine is the most abundant. It makes up 50% of all amino acids in the blood and 60% of those in the body. Not only is glutamine necessary to maintain positive nitrogen balance and protein synthesis, but also it has recently been shown to prevent muscle loss by influencing myostatin levels.[15] Myostatin is a protein that inhibits muscle differentiation and growth. Its increased bioactivity has been observed in glucocorticoid-induced hypercatabolism and is associated with several pathologies characterized by marked skeletal muscle depletion.*[15]

Glutamine is thought to have ergogenic effects through its influences on fluid and electrolyte uptake, glutamine pool repletion after intense training, stimulation of muscle glycogen synthesis, and ability to increase growth hormone levels.[16-18] While ergogenic effects are supported from a biochemical standpoint, more definitive studies are needed.*

Gastrointestinal Support

Immune System Support

Joint & Muscle Support

Sports Nutrition

L-Glutamine Supplement Facts

Serving Size: 1 Scoop (about 4 g)

	Amount Per Serving	%Daily Value
Calories	15	
L-Glutamine	4 g	**

** Daily Value not established.

Other Ingredients: None.

DIRECTIONS: Take 1 scoop daily, mixed with 8-12 oz of water, on an empty stomach, or as directed by your healthcare professional. Consume within 30 minutes of mixing.

Consult your healthcare professional prior to use. Individuals taking medication should discuss potential interactions with their healthcare professional. Do not use if tamper seal is damaged.

STORAGE: Keep closed in a cool, dry place out of reach of children.

FORMULATED TO EXCLUDE: Wheat, gluten, corn, yeast, soy, animal and dairy products, fish, shellfish, peanuts, tree nuts, egg, sesame, ingredients derived from genetically modified organisms (GMOs), artificial colors, and artificial sweeteners.

References

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