**L-Glutamine**

**Control Stress Levels and Boost Immunity**

- An amino acid that is vital in stress and illness
- Helps heal the gut lining
- Essential for muscle building, preserving nitrogen balance and immunity
- Available in both capsule and powder form in an effective dosage

**AOR Code**

- AOR04009

**Variant**

- 250 G POWDER

**Details**

L-Glutamine is one of the 20 fundamental amino acids involved in protein synthesis; it is also the most abundant, forming approximately one fifth of the amino acid pool in the human bloodstream. Glutamine is critical for a wide variety of essential functions, including optimal operation of the kidneys, pancreas, gall bladder, liver, the small and large intestines, and the brain. However it is best known for boosting immunity, helping to heal the gut lining, and enhancing muscle growth.

L-Glutamine’s importance toward good immunity is known to be two-fold: it directly supports the immune system during times of stress through its ability to help produce glutathione, the body’s most powerful antioxidant. It also indirectly supports immunity by reducing intestinal permeability or “leaky gut”, inhibiting undigested particles from accessing the bloodstream, which can trigger an immune response. L-Glutamine stimulates the production of human growth hormone (hGH), which is essential for building muscle and maintaining youthful cellular function. Since L-glutamine is depleted by intense exercise, it is an important component of sports nutrition.

Those who are under undue stress, suffer from leaky gut or have weakened immunity may benefit from L-glutamine; as well as those seeking to increase their muscle mass and improve exercise recovery.
Discussion
L-Glutamine helps support immune and digestive system health after periods of physical stress. L-Glutamine also assists in muscle cell repair after exercise.

Product Variation

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<tr>
<th>Product Code</th>
<th>Size</th>
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<tr>
<td>AOR04009</td>
<td>250 G POWDER</td>
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Supplements Facts

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<tr>
<th>Serving Size: 1 Teaspoon (5 g)</th>
<th>Amount</th>
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<tbody>
<tr>
<td>L-Glutamine</td>
<td>5000 mg</td>
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Non-medical ingredients:

none.

Guarantees

AOR™ guarantees that all ingredients have been declared on the label. Contains no wheat, gluten, corn, nuts, peanuts, sesame seeds, sulphites, mustard, soy, dairy, eggs, fish, shellfish or any animal byproduct.

Adult Dosage

Take 5 grams (approx. 1 teaspoon) in water per day on an empty stomach, or as directed by a qualified health care practitioner.

Cautions

Consult a health care practitioner prior to use if you are following a low protein diet or if you are pregnant or breastfeeding.

Source

Pharmaceutical synthesis

Main Application

Leaky gut

Immune function

Cellular growth & differentiation

Anabolic activity

Alcohol craving

Muscular recovery
Disclaimer

The information and product descriptions appearing on this website are for information purposes only, and are not intended to provide or replace medical advice to individuals from a qualified health care professional. Consult with your physician if you have any health concerns, and before initiating any new diet, exercise, supplement, or other lifestyle changes.

Research

Background

Can’t Get Enough

Glutamine is one of the 20 fundamental amino acids involved in protein synthesis, and it is also the most abundant, forming approximately one-fifth of the amino acid pool circulating in the human bloodstream. It is classified as “non-essential” because it can be synthesized from another amino acid, namely glutamic acid. The significance of glutamine, however, cannot be overstated, as it is critical for a wide variety of essential functions, including: optimal operation of the kidneys, pancreas, gall bladder, liver, the small and large intestines, and the brain. Furthermore, it is a precursor for what is arguably the body’s most powerful endogenous anti-oxidant, glutathione; it also plays a role in growth hormone production and seems to be important for proper glycogen deposition as well.

Maintaining Nitrogen Balance

Glutamine is also the most important of all amino acids in maintaining nitrogen balance within the body, accounting for a full one-third of all amino acid nitrogen transported in the human bloodstream. Although all amino acids release an atom of nitrogen into the bloodstream after they are broken down in the liver, glutamine’s higher concentration in the bloodstream combined with the fact that it has two nitrogen side-chains is the reason for this.

Depleted by Catabolic Stress

A central characteristic of glutamine is that it becomes seriously depleted during the course of catabolic stress such as injury, infection, or even strenuous exercise. While the average person is likely to consume approximately 10 grams of glutamine daily, a conservative estimate for the needs of someone in such a stressful state is 20-40 grams of glutamine daily. This ubiquitous supplement is used by health professionals to treat a multitude of conditions. Rather than asking what glutamine does, it seems more appropriate to ask what it doesn’t do. For practical purposes, however, let us focus on glutamine’s more fundamental usages.

Anti-Carcinogenic

The potency of glutamine has been examined for its possible applications against various types of cancer, and this is somewhat paradoxical since cancer has been described as a nitrogen trap. Considering the essential role of glutamine in nitrogen transport, this forms a scientific dilemma. Tumor cells need to acquire glutamine in order to grow, so while glutamine deprivation seems like the first course of action, it is not practical due to the adverse effects it would cause the host. Furthermore, tumor growth is synonymous with a fervent consumption of glutamine which results in a decrease in the amount of glutamine available for glutathione production, which in turn results in the decreased numbers and activity of glutathione-dependent natural killer cells. In this situation,
supplemental glutamine has been shown to revitalize natural killer cells via the restoration of glutathione.

**Anti-Virus**

Infections cause significant changes in the distribution of glutamine among the organs of the body. Severe inflammatory infections are often referred to as sepsis, and during these periods, circulating insulin-like growth factor (IGF-1) levels are known to drop significantly, which is concurrent with decreased levels of glutamine absorption by the bowel. The intracellular glutamine pool becomes rapidly depleted, especially from the skeletal muscle and the lungs, and the major repository for the glutamine during these times of infection is the liver. The immune system is also a major consumer of glutamine during states of sepsis, and the accumulative effect of all of this glutamine redistribution is the reduced amount of glutamine available for other key cellular functions, including the production of antibodies and glutathione. Supplemental glutamine during these states of sepsis may alleviate this problem, and recent studies have confirmed this.

**Research**

**Supporting the Digestive System**

Recent clinical trials have attempted to assess the significance of adding glutamine to enteral amino acid formulations in hospitals, and the results have been impressively widespread. Enteral diets enriched with glutamine were well-tolerated and alleviated many of the immunological aspects of multiple trauma patients as well as mitigating the extent of mucositis in post-chemotherapy patients.

Studies among laboratory rats have revealed that the intestinal tract and other portal-drained viscera account for approximately 40% of all the glutamine utilized by the whole body. The vast majority of this glutamine is consumed by the epithelial cells which convert it into energy for use by the mucosa, the lining of the small intestine. This importance of glutamine to the intestinal tract (and by extension to glucose metabolism) was only discovered in the last twenty years. This holds important implications for hospital patients placed on enteral nutritional support. For patients with intestinal tract difficulties, this is when a percutaneous endoscopic jejunostomy (PEJ) tube is inserted into the small intestine to provide nutritional support.

**Growth Hormone and Athletic Health**

The importance of growth hormone in overall health and vitality has been well-established for decades. However, obtaining and administering growth hormone from either human or bovine sources (the two most common forms) comes with high costs and inherent risks. This has led to a search for natural growth hormone enhancers, many of whom are amino acids, and one of the most effective and efficient of these is glutamine.

In fact, a recent study demonstrated that even a relatively modest two gram dose of glutamine (orally administered) can illicit a growth hormone level increase of 19% after 30 minutes of ingestion, a rate sustained at 12% after 60 minutes of ingestion. Elevated levels of growth hormone have also been linked to physical activity and exercise, and supplemental glutamine has gained a very firm foothold in the discipline of the latter. The fact of the matter is that according to the latest studies in exercise
physiology, resistance training (which coincidentally is the only type of exercise known to markedly raise growth hormone levels) has a similar effect on endogenous glutamine reserves as sepsis. The skeletal muscle amino acid pool, 60% of which is normally comprised of glutamine, begins to jettison its all-important glutamine reserve to feed the glutinous liver. The homeostasis between the tissues that produce and release glutamine and those that depend on it has once again been disturbed. Some studies have indicated as much as a 50% drop in plasma glutamine levels after a single bout of resistance training exercise, requiring more than 24 hours to recover to pre-exercise levels. In 1996, biochemists at both the departments of Microbiology and Human Movement at the University of Western Australia suggested that glutamine is a 'conditionally essential' amino acid and may need to be supplemented in the diet in certain stress situations.

**Market Trends**

L-glutamine is an amino acid that offers a wide variety of benefits, and is perhaps most well known for its role as a precursor to glutathione, an important antioxidant. It is also widely used in the naturopathic industry for its benefits in the digestive tract for conditions like leaky gut. As an amino acid, it is also used as an ergogenic aid in exercise recovery.

**AOR Advantage**

L-Glutamine provides an effective dose of this important nutrient to avoid problematic depletions and enhance overall health. AOR’s L-Glutamine is offered in both capsule and powder form for your convenience.

**References**


Souba WW. “Medical Intelligence Unit: Glutamine; Physiology, Biochemistry and Nutrition in Critical Illness.” 1992 R.G. Landes Co, Austin, Texas, USA.

Abstract

l-Alanin-l-glutamine supplementation improves the outcome after colorectal surgery for cancer.


Oguz M, Kerem M, Bedirli A, Mentes BB, Sakrak O, Salman B, Bostanci H.

Objective: To investigate the effect of l-alanine-l-glutamine (Gln) on postoperative complication rate and duration of hospitalization in patients operated for colorectal cancer.

Method: A total of 109 patients operated with the diagnosis of colorectal cancer and given enteral nutrition between January 2001 and January 2005 were prospectively analysed. The patients were randomized and analysed in two groups; Gln group (n = 57): patients were given parenteral Gln (1 g/kg/day, Dipeptiven, Fresenius Kabi, Germany) together with enteral nutrition (Ensure; Abbott, Zwolle, The Netherlands) and the control group (n = 52) only received enteral nutrition (Ensure; Abbott), which was a standard isonitrogenous and isocaloric formula. The supplemental enteral nutrition was provided for at least 5 days pre- and postoperatively according to the nutritional status of the patients. Age, gender, subjective global assessment (SGA), body mass index (BMI), serum albumin, protein, associated disorders, localization of pathology, techniques of anastomosis, postoperative complications and length of hospital stay were analysed for each patient.

Results: The duration of nutritional support in the Gln group was 6 /- 2 and 5 /- 1 days pre- and postoperatively; while it was 7 /- 1 and 6 /- 1 days for the control group, and there were no significant difference among the groups (P > 0.05). Age, gender, SGA, BMI, levels of serum albumin and protein, localization of pathology and techniques of anastomosis were also similar (P > 0.05). Wound infection (P = 0.038), intraabdominal abcess formation (P = 0.044) and wound dehiscence (P = 0.044) were significantly higher in the control group than in the Gln group. There was no significant difference in terms of anastomotic leakage and other complications between both groups (P > 0.05). Hospital stay was significantly shorter in the Gln group (P < 0.001).

Conclusion: Supplementation of parenteral Gln decreased the postoperative complications and hospital stay and in the patients undergoing the colorectal surgery for cancer.

Effects of glutamine-enriched total parenteral nutrition on acute pancreatitis.


Sahin H, Mercanligil SM, Inanc N, Ok E.

Aim: This study was performed to determine the effects of glutamine enriched total parenteral nutrition (TPN) on the patients with acute pancreatitis (AP).

Method: Forty patients with AP, who had Ranson’s score between 2 and 4 received either standard
TPN (control group) or TPN with glutamine (treatment group). The patients in the treatment group received TPN containing 0.3 g/kg/days glutamine. At the end of the study, patients were evaluated for nutritional and inflammatory parameters, length of TPN and length of hospital stay.

Results: The length of TPN applications were 10.5 /-3.6 days and 11.6 /-2.5 days, and the length of hospital stays were 14.2 /-4.4 and 16.4 /-3.9 days for the treatment and control groups (NS), and the complication rates in the treatment and control groups were 10 and 40%, respectively (P < 0.05). The transferrin level increased by 11.7% in the group that received glutamine-enriched TPN (P < 0.05), whereas the transferrin level decreased by 12.1% in the control group (NS). At the end of the study, slight but not significant changes were determined in both groups in fasting blood sugar, albumin, blood urea nitrogen (BUN), creatinine, total cholesterol concentrations, aspartate aminotransferase (AST), alanine transaminase (ALT) and lactate dehydrogenase (LDH) activities, leukocytes, CD(4), CD(8), serum Zn, Ca and P levels compare to the baseline levels (NS). Significant decreases were determined in serum lipase, amylase activities and C-reactive protein (CRP) levels in both groups (P < 0.05).

Conclusions: The results of this study have shown that glutamine supplementation to TPN have beneficial effects on the prevention of complications in patients with AP.