

L-Glutamine SAP

Science-based amino acid for gastrointestinal and immune health

L-Glutamine is the most abundant amino acid in the human body.^[1] Glutamine is metabolized in the small intestine and serves as an important fuel source for intestinal mucosa.^[2] Glutamine plays an important protective role in the intestinal tract, and is crucial for patients with increased permeability of the intestinal system, which can be seen in patients with inflammatory bowel diseases — including for example Crohn's disease or ulcerative colitis —, as well as in irritable bowel syndrome and allergies.^[3, 4] This amino acid plays an important role in nutrient metabolism, the immune system, protein turnover, and acid/base balance.^[1] With infection, severe burns, cancers, and some other pathologies, both intracellular and extracellular concentrations of glutamine are markedly reduced.^[1] This leads us to believe that glutamine supplementation may play an important role in the body's ability to recover from illness. Glutamine has also been studied for use in patients after gastric surgery and may act as a motility recovery agent after gastrectomy.^[5] Patients receiving treatment for cancer often experience malnutrition and cachexia, which may be improved with glutamine supplementation.^[6]

ACTIVE INGREDIENTS

Each scoop contains:

L-Glutamine approx. 5 g

This product is non-GMO.

Contains no: Gluten, soy, wheat, eggs, dairy, yeast, citrus, preservatives, artificial flavour or colour, allergens, starch, or sweeteners.

L-Glutamine SAP contains 60 servings of approximately 5 g per bottle.

DIRECTIONS FOR USE

Adults: Take **1 scoop once daily mixed with juice or water**, or as directed by your healthcare practitioner.

INDICATIONS

L-Glutamine SAP can:

- Be used to protect and heal a permeable intestinal tract.
- Help reduce inflammation in the intestinal tract, and therefore help treat IBD and IBS.
- Be beneficial to enhance recovery from acute illnesses or infections and severe burns.
- Provide ergogenic benefit to endurance athletes by increasing time to exhaustion.
- Be helpful in preventing postoperative ileus after gastrointestinal surgery.
- Help treat and prevent cachexia and malnutrition in patients undergoing cancer treatment.

SAFETY

L-Glutamine is generally considered safe, with the no-observed-adverse-effect level determined to be 5.0% L-glutamine in the diet, which was around 4000 mg/kg.^[7]

PURITY, CLEANLINESS, AND STABILITY

All ingredients listed for all **L-Glutamine SAP** lot numbers have been tested by an ISO 17025-accredited third-party laboratory for identity, potency, and purity.



Scientific Advisory Panel (SAP):
adding nutraceutical research
to achieve optimum health



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L-GLUTAMINE AND INFLAMMATION

L-Glutamine administration has been shown in recent studies to enhance heat shock protein (HSP) expression, which may be the key to its mechanism of action with regards to its protective ability.^[4] In a study performed on rats which were induced with colitis, animals were administered either 0.75 g/kg/d glutamine or a placebo for 7 d. After 7 d, a reduction was observed in bleeding and diarrhea in the treatment group compared to placebo, concomitant with increases in levels of both Hsp25 and Hsp70.^[4] Researchers concluded that glutamine is crucial for colonic epithelium to mount a cell-protective, antiapoptotic and anti-inflammatory response against inflammatory injury.^[4]

L-GLUTAMINE AND POSTOPERATIVE ILEUS

One of the most common complications of gastrointestinal surgery is postoperative ileus (POI).^[5] In a study conducted on patients after a partial distal gastrectomy for gastric cancer, patients were split into two groups and received either glutamine at 3 g/d or placebo.^[5] Results were based on manometric recordings done 12 d after surgery. Motor activity in the duodenum of the glutamine group was significantly greater than that of the control group.^[5] Phase-3 motor activity (interdigestive migrating motor contractions) in the glutamine group was rated at 60%, versus 19% in the control group.^[5] This study indicates that glutamine can function as a motility-recovery agent after gastrectomy.^[5]

L-GLUTAMINE AND ONCOLOGY

For patients with cancer, malnutrition is associated with a poor prognosis, and weight loss can be a very important predictor of mortality.^[6] Patients supplementing with glutamine saw benefit, including a reduction in tissue toxicity and improved outcomes, while supporting the efficacy of the chemotherapy treatments.^[6] In a study looking at 50 GI cancer patients who had undergone surgery and received total parenteral nutrition (TPN) after surgery, researchers explored the inflammatory modulation effect of glutamine supplementation in one half of the patients.^[6] The supplemented group showed a reduction in interleukin-6 (IL6) and serum C-reactive protein, and had higher serum prealbumin levels, as well as better nitrogen balance than the control group.^[6] The control group had 4 cases of postoperative infections, while none were reported in the treatment group.^[6] Researchers concluded that enriching TPN with glutamine may be beneficial in reducing inflammation and decreasing morbidity associated with infections in postoperative GI cancer patients.^[6]

L-GLUTAMINE AND INFLAMMATORY BOWEL DISEASE / IRRITABLE BOWEL SYNDROME

The pathophysiology of irritable bowel syndrome (IBS) is not well understood, but one pathway that may be involved is that of increased intestinal permeability.^[3] Researchers performed a controlled study on patients with diarrhea-predominant IBS and assessed their intestinal membrane permeability using the lactulose/mannitol test as well as looking at the glutamine synthetase expression in gut tissue.^[3] A subset of 42% of patients had both increased intestinal membrane permeability and decreased glutamine synthetase expression compared to the controls and IBS patients with normal membrane permeability.^[3] This result indicates that certain patients with IBS who have increased membrane permeability as well as decreased glutamine synthetase expression may benefit from supplemental glutamine in the diet.

A study performed in rats looked at the benefit of prophylactic administrations of glutamine for its capability to stop inflammatory damage.^[9] Researchers found that administration of glutamine before induction of colitis resulted in decreased indices of inflammation; however, this same benefit was not seen if administered at the same time as the colitis was induced.^[9] Further study needs to be performed on human subjects but it may be promising in that glutamine could be useful for patients with colitis in remission to help prevent flare-ups.

L-GLUTAMINE AND ENDURANCE ATHLETES

Endurance athletes often become mildly dehydrated during the course of training and competition. Researchers exploring the effects of L-alanyl-L-glutamine ingestion during performance measured changes in fluid regulations; immune, inflammatory, as well as oxidative stress; and recovery in athletes who were properly hydrated and during dehydration.^[10] Across four groups of athletes tested, group 1 did not rehydrate, group 2 rehydrated using only water, group 3 rehydrated using water and 0.05 g/kg of the supplement, and group 4 rehydrated using water and 0.2 g/kg of the supplement.^[10] Subjects then worked at 75% of their $\dot{V}O_{2\max}$ on a cycle ergometer. Blood samples were obtained immediately following the exercise and after resting for 24 h.^[10] Results demonstrated that athletes in groups 3 and 4 had significantly greater times to exhaustion than those in groups 1 and 2, as well as having lower aldosterone levels and higher plasma sodium levels.^[10] Group 4, who received the largest amount of glutamine, demonstrated the greatest improvement.^[10] Researchers concluded that the supplementation provided a significant ergogenic benefit to athletes by increasing the time to exhaustion during mild dehydration.^[10]

L-GLUTAMINE AND SEVERE BURNS

A clinical study was performed exploring the protective effects of oral supplementation of glutamine on intestinal mucosal barrier function in patients with severe burns.^[2] Patients were randomly divided into two groups and received either placebo or glutamine granules 0.5 mg/kg orally for 14 d.^[2] Results showed that the glutamine group compared to the control group had a lower urinary lactulose/mannitol ratio, improved wound healing, and shorter hospital stays of 46.6 d on average, versus 55.7 d on average in the control group.^[2] This study demonstrates that oral glutamine could reduce the amount of intestinal injury and permeability as well as improve wound healing, leading to shortened hospital stays.^[2]

SAFETY

L-Glutamine is a safely administered conditional essential amino acid. Safety studies have demonstrated that L-glutamine can make up 5% of the total dietary intake with no adverse effects noted.^[7]

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