

# Pure L-Glutamine Powder



Science-Based Nutrition™



as a building block of protein, promoting muscle growth. L-Glutamine is therefore very popular among athletes who undergo heavy workouts. Many studies highlighted the importance of L-Glutamine supplementation in stimulating anabolic functions such as protein synthesis, cell growth and differentiation, and inhibiting catabolic functions such as protein degradation. Individuals who engage in intense physical activities have an increased need of L-Glutamine to restore its levels to normal to avoid loss of muscle mass and preserve other biological functions. Therefore, L-Glutamine supplementation may promote muscle growth and support athletic performance.\*<sup>5-7</sup>

## May Help With Recovery of Muscle Strength and Reduce Muscle Soreness After Physical Exercise\*

Any intense exercise can lead to muscle damage. Various clinical studies showed the importance of L-Glutamine supplementation on the recovery of muscle strength after heavy workouts. Being the central free amino acid in the body, L-Glutamine is vital to muscle function. Research has demonstrated L-Glutamine plasma level could greatly be reduced during post-exercise recovery period. This decline, if not corrected, lead to acidosis and muscle soreness. Studies showed the positive effects of L-Glutamine supplementation on muscle strength recovery and muscle soreness reduction after intense exercises.\*<sup>5,8-11</sup>

## Helps Maintain a Healthy Immune System for Athletes\*

In sports medicine, research has shown the useful and vital role of L-Glutamine on maintaining optimal immune function.\* A popular rationale is that higher than normal intake of glutamine is needed to counter exertion-related demands from the immune system especially when the body is under stress such as during injuries or traumatic states, or in athletes engaged in heavy exercise training.\*<sup>12-17</sup>

## INGREDIENTS

Doctor's Best Pure L-Glutamine Powder contains L-Glutamine, an amino acid that is a building block of protein. L-Glutamine is most commonly used to support muscle growth, skeletal muscles and athletic endurance. Supplementing with L-Glutamine allows the body the much-needed amino acids to increase muscle hydration. This is an essential process in the body that supports muscle recovery from high intensity workouts.\*

L-Glutamine has an important role in maintaining muscle growth and health in both children and adults.\* L-Glutamine is also the most abundant free amino acid in the body. It is synthesized mainly in the skeletal muscle, liver, and lungs and has an important role in energy production, being the major fuel source for the liver, the intestines, and immune system. L-Glutamine is an essential amino acid in critical states (stress, intense physical activities, injuries, illness) when the body's need for glutamine exceeds its own capacity to produce sufficient amounts. Biological, pharmaceutical and safety aspects of L-Glutamine have been well studied.<sup>1</sup> Based on research and many clinical studies, L-Glutamine has become widely known and used for its ergogenic capabilities, improving physical performance, stamina, and recovery after intense exercise among athletes. L-Glutamine supplements is also very popular among the general population and athletes for its role in immune health and exercise.\*<sup>2-5</sup>

## BENEFITS

- Helps support muscle mass and strength and post-work recovery\*
- Helps support muscle mass and strength\*
- Helps support muscle hydration\*
- Helps promote muscle growth and athletic performance\*
- May help with recovery of muscle strength and reduce muscle soreness after physical exercise\*
- Helps maintain a healthy immune system for athletes\*

## EXTENDED BENEFITS

### Helps Promote Muscle Growth and Athletic Performance\*

L-Glutamine is considered as one of the most important amino acid involved

## Supplement Facts

Serving Size 1 scoop (≈5 grams)  
Servings Per Container Approximately 60

	Amount Per Serving	% Daily Value
L-Glutamine	5 g	†

† Daily Value not established.

**Other Ingredients:** None.

**Suggested Adult Use:** Add 1 scoop to 8 ounces of juice or protein shake and mix well. For best results, drink 1 hour before exercise. Repeat after exercise or before bedtime, or as recommended by a nutritionally-informed physician.

**WARNING:** Avoid using if you are pregnant, nursing or if you have liver problems. If you are sensitive to monosodium glutamate (MSG), you may be sensitive to glutamine as the body converts glutamine to glutamate. It is recommended to supplement with B vitamins if taking L-glutamine long term.

**NOTE:** Settling of contents may occur, which may cause slight variations in number of servings.

**Non-GMO / Gluten Free / Soy Free / Vegan**  
Store in a cool dry place.

\* These statements have not been evaluated by the Food and Drug Administration. This product is not intended to diagnose, treat, cure or prevent any disease.

## PHARMACOLOGICAL & CLINICAL STUDIES

A study determined the effect of exercise combined with L-Glutamine supplementation on various athletic performances and body composition of soccer players. The intervention group received oral glutamine (0.1 g/kg/day) diluted in water. In the intervention group, L-Glutamine supplement had significant increasing effect on aerobic capacity and lean body mass compared to the placebo group. Based on the outcomes, L-Glutamine supplement may therefore support and improve athletic performances and body composition.<sup>\*6</sup> Similar results on aerobic and anaerobic energy system were found in another study conducted among handball players who received L-Glutamine supplement (0.3g/kg/day).<sup>\*7</sup>

A double blind, randomized study determined the effects of L-Glutamine supplementation on performance and hormonal changes in non-athlete male students during a week of resistance training. Participants received either placebo or glutamine powder supplementation (0.35 g/kg/day). Results showed that both groups presented an increase in their performance however, the glutamine group showed greater increases in upper and lower body strength, explosive muscular power, and blood testosterone. It was concluded that glutamine powder supplementation during resistance training improved physical performance and even improved body composition (increased body mass, fat-free mass, and reduced body fat).<sup>\*18</sup>

A clinical study examined the influence of L-Glutamine on endurance, power, and recovery following a short period of heavy and intense exercise of cycling. Participants who were randomly assigned glutamine, received 0.3 g/kg/day in 2 separate doses for 6 days while others received placebo. Based on the results, findings suggest short-term glutamine supplementation may not have an effect on acute recovery from exhaustive endurance exercise but may nevertheless improve performance in moderate to well-trained individuals.<sup>\*9</sup>

In a double-blind, randomized, placebo-controlled crossover study, the influence of oral L-Glutamine supplementation on muscle strength recovery and soreness was evaluated following a unilateral knee extension eccentric exercise. The placebo ingested 0.6 g/kg/day of maltodextrin while the glutamine group ingested 0.3 g/kg/day of L-Glutamine with 0.3 g/kg/day of maltodextrin over 72 hours. Results showed that L-Glutamine supplement produced greater peak torque and resulted in lower soreness than placebo. The authors concluded that oral supplementation of L-Glutamine powder may improve the time course of strength recovery and reduce muscle soreness more rapidly following intense exercise.<sup>\*10</sup>

The effect of L-Glutamine supplementation on indices of recovery following a muscle-damaging exercise (eccentric exercise that included 100 drop jumps and 90° knee flexion) was conducted among 15 active young males. Volunteers were randomly assigned glutamine (0.3g/kg/day at 0,24,48, and 72 hours post-exercise) or placebo at the same rhythm (0.3g/kg/day of maltodextrin). Results showed that muscle soreness was significantly lower and there was a greater preservation of peak torque in the glutamine group compared to the placebo group. The authors concluded that L-Glutamine supplementation could help maintaining muscle strength and be effective in lowering muscle soreness following intense exercises.<sup>\*19</sup>

Short-term effect of L-Glutamine supplementation on fatigue and levels of blood lactate was examined among male elite swimmers. Based on a mid-experimental research, randomized, placebo-controlled crossover study, the participants swimmers received at different time of the study placebo and glutamine (0.1 g/kg/capsule for 4 weeks). Results showed that L-Glutamine led to a significant reduction in the fatigue index and produced lactate in the supplementation group compared to the placebo group. Based on the results, it was concluded that glutamine supplementation can have a significant impact on the reduction of blood levels lactate, tolerance of athletes to buildup lactic and the reduction of the fatigue index.<sup>\*11</sup>

A clinical pilot study investigated the effects of L-Glutamine supplementation on the immune system among 30 athlete students who were randomly assigned to 3 groups: L-Glutamine supplementation group (3.5 g powder dissolved in water, 4 times during the training),

placebo group (maltodextrin), or control group (no physical activities and no supplementation nor placebo). Globally, based on the data analyses from blood samples, it was found that glutamine supplementation can prevent excessive increase or decrease in some immune system variables reducing the physical exercise harmful effects. The authors concluded that L-Glutamine has a beneficial effect on the immune system in athletes and the use of glutamine powder supplementation may be recommended during intensive training in order to reduce the possible exercise-induced effects encounter in athletes.<sup>\*20</sup>



## SCIENTIFIC REFERENCES

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\* These statements have not been evaluated by the Food and Drug Administration.  
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