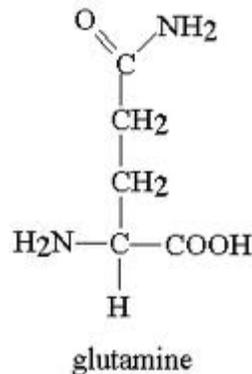


Glutamine's a Friend of Mine

JULY 6, 2011 6:01 AM

By: Jose Antonio PhD

Date Published: July 2011



I wrote about glutamine way back when Bill Clinton was the President of the U.S. of A.¹ Back then, I held the position that although there was a lot of clinical evidence supporting the need for supplemental glutamine in the maintenance of muscle protein mass and immune system function in critically ill patients, little work had been done that looked at its role vis a vis heavy exercise training. I speculated that glutamine has potential usefulness as a dietary supplement for reasons primarily related to the immune system.¹ Clearly, glutamine is an important amino acid. It is the most abundant free amino acid in the body. Its primary source is skeletal muscle, from where it is released into the bloodstream and transported to a variety of tissues. In fact, several studies have shown that glutamine is important for rat and human neutrophil (a type of white blood cell) function and that these cells utilize glutamine at high rates. Physical exercise has also been shown to induce considerable changes in neutrophil metabolism and function. Because neutrophils represent 50-60% of the total circulating leukocyte or white blood cell population and play a key role in inflammation, both physical exercise and glutamine might be expected to regulate the inflammatory process.²

Now mind you, let me get to the punch line first. If you're like those middle-aged men in Florida who take a leisurely stroll around their gated communities three times a week for 30 minutes, taking glutamine would be about as useful as a raincoat in the Sahara desert. But if you're someone who busts your butt training like a maniac, whether it's lifting weights 5 times a week with some cardio mixed in, or are a serious endurance runner doing 60 miles a week of roadwork, then for you my friend, glutamine just might be something worth adding to your supplement arsenal.

Protect those White Blood Cells

If you remember way back in your biology class, you have two main types of cells in your blood, red blood cells (RBCs) and white blood cells (WBCs). Your RBCs deliver oxygen to your cells while also taking away carbon dioxide. Your WBCs (of which there are several types) help protect your body from foreign invaders. They are an integral part of your immune system. In fact, we know that lymphocytes and neutrophils can 'die' as a result of exercise. So what happens if you supplement folks who exercise with hydrolyzed whey protein enriched with a glutamine dipeptide (Gln)? Here's what happens in a group of serious athletes. Nine triathletes performed two exhaustive exercise trials with a 1-week interval in between. Thirty minutes before treadmill exhaustive exercise each subject ingested 50 grams of maltodextrin (placebo) or 50 grams of maltodextrin plus 4 tablets of 700 mg of hydrolyzed whey protein enriched with 175 mg of glutamine dipeptide dissolved in 250 mL water. What did they discover? Supplementation of maltodextrin plus Gln (Gln) prevented the loss of lymphocyte membrane integrity and the mitochondrial membrane depolarization induced by exercise. In other words, it helped maintain the health of white blood cells.³ Keep in mind again that this is exhaustive exercise. The key word being 'exhaustive.'

Lessens Risk of Illness

Perhaps the classic studies that are most cited regarding glutamine were those published in the Nutrition journal and the European Journal of Applied Physiology. The effects of feeding glutamine was investigated both at rest in sedentary controls and after exhaustive exercise in middle-distance, marathon and ultra-marathon runners, and elite rowers, in training and competition. As you will see, they are looking at its role in those who exercise long and hard! Questionnaires established the incidence of infection for 7 days after exercise. Here is what they discovered: infection levels were highest in marathon and ultra-marathon runners and in elite male rowers after intensive training. Plasma glutamine levels were decreased by approximately 20% 1 hour after marathon running. A marked increase in numbers of white blood cells occurred immediately after exhaustive exercise, followed by a decrease in the numbers of lymphocytes. And giving them glutamine after exercise appeared to have a beneficial effect on the level of subsequent infections.⁴ Specifically, athletes participating in different types of exercise consumed two drinks, containing either glutamine or placebo immediately after and 2 hours after exercise. The percentage of athletes reporting no infections was considerably higher in the glutamine group (81%) than in placebo (49%).⁵

Another area where glutamine could help is in reducing blood ammonia. Ammonia was linked to the development of fatigue as early as 1922. Also, increases in blood ammonia levels have been reported in rats after swimming and in humans after arm work, maximal cycle ergometry, and treadmill exercise.⁶ Thus, a group of scientists examined the effect of glutamine and (or) carbohydrate supplementation on ammonemia in high-level runners. Fifteen men in pre-competitive training ran 120 minutes (approximately 21 miles) outdoors on 4 occasions. During the control trial ammonia increased progressively to approximately 70% above rest concentration. However, supplementation with glutamine in these high-level, endurance athletes reduced the accumulation of blood ammonia.⁷

Promotes glycogen repletion

One of the lesser known effects of glutamine is its role in glycogen repletion. In this study, volunteers completed a glycogen-depleting exercise protocol. Again, you'll notice that this is hard exercise, not a walk around the park! After the exercise bout, the subjects then consumed 330 ml of one of three drinks, a glucose polymer solution, 8 grams glutamine in 330 ml glucose polymer solution, or 8 grams glutamine in 330 ml placebo. They found that glutamine alone promoted storage of muscle glycogen to an extent similar to oral glucose polymer. Ingestion of glutamine and glucose polymer together promoted the storage of carbohydrate outside of skeletal muscle, the most feasible site being the liver.⁸ Very interesting indeed. **So you have glutamine lessening the risk of illness, decreasing levels of ammonia, protecting white blood cells, and promoting muscle glycogen repletion.**

And one of the latest studies showed that that L-alanyl-L-glutamine supplementation provided a significant ergogenic benefit by increasing time to exhaustion during a mild hydration stress. This ergogenic effect was likely mediated by an enhanced fluid and electrolyte uptake.⁹

How much should I take?

Acute intakes of glutamine of approximately 20-30 grams are safe in healthy adult humans and no harm was reported in 1 study in which athletes consumed 28 g glutamine every day for 14 days. Also, doses of up to 0.65 g/kg body mass of glutamine (in solution or as a suspension) have been reported to be tolerated by patients and did not result in abnormal plasma ammonia levels.¹⁰ Remember the Antonio adage, "if it helps or has a neutral effect, try it."

With glutamine, it is clear that taking it could help you. And there's no harm or risk to trying it. If you look at the totality of scientific evidence, it is evident that glutamine doesn't help everybody. But if you work your tail off, and you need that extra immune boost, then add 5-15 grams of glutamine to your post-workout shake!

What kind of Glutamine should I take? I would recommend Max Muscle's Glutamatrix. It is multisource form of glutamine which includes peptides for great absorption. Much of the L-glutamine gets used up in the small intestine which is good for our immune system but not as beneficial to muscle recovery. Peptides are not recognized the same way and pass directly through the intestinal wall with no digestion required. Theoretically more is available for recovery from exercise. Many customers swear by this product. Just add it to your protein recovery shake and feel the difference. Especially important for the running community. <http://www.qcmaxmuscle.com/pds/MaxGlutaMatrixPDS.pdf>

OR for a comprehensive recovery which includes protein, glutamine, carbs, branch chains, electrolytes and antioxidants ask for ARM – Advanced Recovery Matrix. The Cadillac of recovery drinks, ARM will replace everything you lost. For the most grueling runs or workouts.

Come in for a free sample: http://www.qcmaxmuscle.com/pds/Max_ARM_info.pdf.

Scott Herkes / certified Nutrition coach