

Prevent Muscle Breakdown

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During times of metabolic stress such as fever, illness, injury, infection, dieting, continuous over exercise, or chemotherapy the body can't manufacture all the amino acids it needs for repair. To compensate for the deficiency of amino acids, the body will catabolize muscle to supply its needs.

The amino acid glutamine constitutes up to 1/3 of the amino acids needed for repair. The research is very clear that supplementing glutamine prevents muscle breakdown. Glutamine is not only a key player supporting the lean muscle mass, but it supports liver and the immune system as well. It also helps combat depression, anger and fatigue, fights cancer and makes aging easier. Let's review some forgotten facts about this amazing amino acid.

Glutamine is considered a conditionally essential amino acid. This means that "in a healthy environment the body can manufacture ade-



quate amounts of glutamine. But under stress we can't make it fast enough hence the muscle catabolism."

The mucosa in the small intestine are composed of fingerlike projections called villi which are where the enterocytes are located. The enterocytes are some of the most rapidly multiplying cells in the body. Enterocytes are responsible for the uptake of minerals, amino acids, fats and complex sugars to name a few of their functions. The turnover of these cells is around three days. The primary energy source for

these amazing cells is glutamine. During illness or stress the demand for energy by the intestines increases dramatically as well.

Interestingly, glutamine is a major antiulcer drug in Asia. Japanese scientists have shown that glutamine can prevent drug induced gastritis.

Dr. Fasano, one of the world leading researchers on gut health, shared that anyone under chronic stress should take glutamine for gut health. Know anybody who is not under chronic stress?

Glutamine is important for the exocrine part of the pancreas. The exocrine function is involved in the alkalization of digestive juices as well as releasing enzymes into the intestine to digest food. Glutamine is needed to break down ammonia in the liver. Glutamine contains two nitrogen atoms and therefore involved in the production of nitric oxide.

Glutamine is also used as a precursor to make glutathione. Glutathione comes from three amino acids, glutamate, cysteine and glycine. The glutamate portion of glutathione is derived in large part from glutamine.

We've discussed that glutathione is the holy grail of antioxidants. In a recent webinar, Dr. Alex Vasquez shared an article "glutamine and whey protein improve intestinal permeability in patients with Crohn's disease: a randomized control trial," showing glutamine is beneficial in the treatment of Crohn's disease. The same article also showed whey protein was beneficial in Crohn's disease. The dose was 0.5 gram per kilogram. Participants used either glutamine or whey protein, however both groups showed significant benefit. If the patient is not sensitive to whey protein, Dr. Vasquez suggests using both but at a lower dose.

One of glutamine's benefits is the cost. It comes in both capsule and powder form but the powder is by far the most economic form. Since it is virtually tasteless, it can be added to a small amount of water or juice or added to a smoothie.

Doses for L-glutamine can range from 1 tsp (3 grams) once a day to 1 tablespoon (9 grams) three times a day, depending on the nature and duration of the condition being treated.

As a side note, most amino acids are grown in huge 750,000 gallon vats and collected as a byproduct of bacterial fermentation. To avoid contamination, several steps are taken to purify the product.

There are four different grades of amino acids. The lowest grade is used for animals. Other grades are used as fortifying agents in the food industry or sold as supplements. The highest or purist grade is available for pharmaceutical companies to make injectable amino acids or to put in IV drip bags.

Obviously the most expensive, refined products will be used in these cases. This is the quality of amino acids Biotics Research has used since they began over 40 years ago. Because they were involved in the genetics and Biotech field they had to use the top grade materials in the research and development they were involved in before they started making nutritional supplements. You can see a link below for a discussion on their involvement with toxicology.

Fortunately for clinicians they never switched to a lower grade which means we can give the purest quality of amino acids to our patients. When someone is well, an additional bacterial load from poorly processed material in the product may not make a big difference. However if someone already has a stressed immune system for whatever reason, the higher quality can make all the difference.

Research is very clear that supplemental glutamine prevents muscle breakdown. So the more stress our patients face, especially prolonged stress like hospitalization, let's remember glutamine's multiple roles. It's inexpensive and easy to add to someone's diet.

Thanks for reading this week's Tuesday Minute edition. I'll see you next Tuesday.