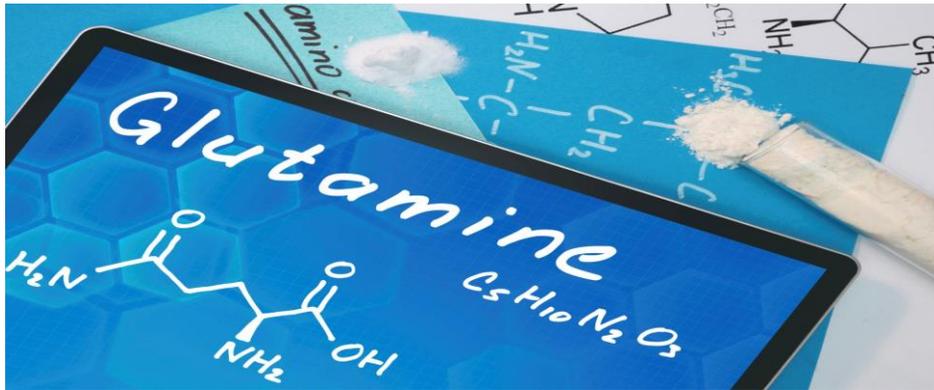


# PEPTIDE BONDED GLUTAMINE "MAKING A GOOD THING BETTER"

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## AMINO ACID OVERVIEW

There are a total of 20 amino acids. Eleven of these are called “non-essential” because the body can produce them in the liver. The other 9 are “essential amino acids” because we must get them from the food and supplements we eat. This makes them more critical. A “complete protein” source is one that contains all the essential and non-essential amino acids. Casein, whey, and soy are all complete protein sources.

American Casein Company has been a worldwide leader in supplying protein powders for over fifty years. It is the individual amino acids that our protein products are composed of that are the magical substances critical to repair or build muscle. The role that amino acids play far exceeds just building muscle.

Amino acids are integral in the production of enzymes, hormones, blood components, and maintenance of our acid base balance. They are essential to maintain the body in homeostasis and play an integral role in almost all physiological processes that keep us alive (1).

Essential Amino Acids		Non-essential Amino Acids	
✓ Histidine	✓ Phenylalanine	✓ Alanine	✓ Glutamine
✓ Isoleucine	✓ Threonine	✓ Arginine	✓ Glycine
✓ Leucine	✓ Tryptophan	✓ Aspartic acid	✓ Proline
✓ Lysine	✓ Valine	✓ Cysteine	✓ Serine
✓ Methionine		✓ Cystine	✓ Tyrosine
		✓ Glutamic acid	

## **GLUTAMINE**

Glutamine is officially classified as a non-essential amino acid. It is present in the body in very large amounts. It is the most abundant free amino acid in the circulatory system and intracellular pools. It plays a part in the synthesis of amino acids, proteins, nucleotides, collagen and various components of cartilage (2, 8).

Glutamine functions as an immune enhancer when our immune system is suppressed by stress on the body. This could be the result of surgery, trauma, burns or infection, to name a few (3).

Stressful events such as these also have the ability to increase catabolic processes which break down many of our protein structures. Glutamine works to enhance protein synthesis and decrease catabolism. Some regard it as a “*conditionally essential*” amino acid (2, 4).

It has been demonstrated that stressful catabolic disease states result in an increase in the breakdown of glutamine along with an increase in glutamine metabolism. This has caused some to think that glutamine is not a non-essential amino acid but in reality is a conditionally essential nutrient (4). For the time being however it is still classified as a non-essential amino acid.

Levels of Glutamine have been shown to fall significantly (as much as 50%) after stressful events such as injury, surgery or major infection (2). It has been found that levels of glutamine stay decreased for a longer period of time after a stressful event compared with the levels of other amino acids. It is therefore quite significant that synthesis of glutamine is accelerated after injury (3).

An interesting study was completed by Dr. Handley et al in which he concluded that glutamine is actually an essential amino acid. He based this on the fact that cartilage cells called chondrocytes and other connective tissue cells would not regenerate without it (5).

## **WHAT IS THE BENEFIT OF PEPTIDE BONDED GLUTAMINE**

Peptide bonded glutamine is a substance which can be made from hydrolyzed wheat protein as well as other proteins. A critical study in understanding the science of glutamine absorption and availability was completed in 2003 by Dr. Preiser and his colleagues and published in Nutrition Journal (6). A critique of this paper is presented by well-known protein guru Phil Connolly, a consultant to the sports industry and formulator himself. (7).

Glutamine peptides are absorbed almost twice as fast as free form L-Glutamine and therefore can get to work faster. This is because the peptide chains are broken up into smaller fragments outside the body before being ingested. Some gastrointestinal upset can accompany either the ingestion of L-Glutamine or Glutamine peptides.

It was a well-known fact that the addition of glutamine to nutritional formulations given to critically ill patients is associated with a reduction in morbidity and mortality. In the study by Preiser a standard glutamine preparation from Ross Abbott labs was compared with peptide bonded glutamine derived from wheat protein. Both intestinal mucosa and plasma concentrations of glutamine were evaluated after this

It is significant to note that previous studies comparing L-Glutamine to peptide bonded glutamine were done using what some feel are inferior sources of peptide bonded glutamine peptides such as carob beans and whey glutamine peptides.(7).

The authors in the Preiser study found no difference in the plasma concentration but a significant difference in gut mucosal concentration between the two glutamine preparations. Gut mucosal concentrations were significantly higher following administration of the peptide bonded glutamine. It was hypothesized that the plasma concentrations were not increased because of the rapid metabolism of glutamine and the body's attempt to maintain a steady state.

A higher intestinal concentration translates into increased availability of glutamine to go to work in the body repairing damaged structures and/or helping those with critical life threatening medical issues. The process of hydrolysis of wheat protein delivers to our customers a readily absorbed product that can disperse a good supply of the amino acid that some feel can be considered a "conditionally essential nutrient" (4).

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