

## 7 Natural Glutathione Boosters

[Glutathione](#) in the same manner as [carnitine](#) is technically not one of the amino acids essential for the synthesis of proteins. Glutathione is more properly classed as a tripeptide. Being mainly produced by the body from the a combination of the amino acids [cysteine](#), the [glutamic acid](#) and [glycine](#) in varying proportions - it is thus a complex of [amino acids](#). As it is formed from these three amino acids, it is usual to consider glutathione in connection to these three amino acids.

Glutathione is found in all human tissues, with the highest concentrations found in the liver and eyes. Glutathione's main role is as a powerful [antioxidant](#) to rid the body of free radicals.

Glutathione also plays a vital role in the detoxification of harmful substances by the liver and can chelate (attach to) heavy metals such as lead, mercury, and cadmium. It is also believed that glutathione carries nutrients to lymphocytes and phagocytes, important immune system cells.

Glutathione is found at the highest levels in the liver - here, the compound actively detoxifies all the harmful compounds excreted through the bile along with the breakdown products of the body's metabolism. Glutathione is also released directly into the bloodstream in small amounts throughout the day. In the bloodstream, the compound helps in the maintenance of the integrity of the red [blood](#) cells and actively protects white blood cells from metabolic [toxins](#). The lungs and the intestinal tract are other areas where active stores of glutathione are to be found. Glutathione is essential for [carbohydrate](#) metabolism; it also displays some anti-[aging](#) effects. This action helps in the breakdown of oxidized fats - one of the main contributors to [atherosclerosis](#) in people.

The nervous system is the first area in which the ill effects of glutathione deficiency shows itself. Glutathione deficiency can bring on physical symptoms such as lack of coordination, all sorts of mental disorders, tremors, and great difficulty in maintaining proper balance. The development of lesions in the brain is thought to be the main cause of these disorders.

Oral supplementation of Glutathione is not very effective due to the secretion of the enzyme [gamma-glutamyl transpeptidase](#) in the gastrointestinal tract. This [enzyme](#) breaks down glutathione before any significant amount of the compound can translocate into the blood stream.

The ability of the supplements of vitamin C can to help raise blood levels of the compound glutathione are also pointed out as a possible benefit by certain researchers. Glutathione levels in the blood stream is raised by the [vitamin C](#) and some other supplements like the [fatty acid](#) lipoic acid, the amino acid [glutamine](#), the amino acid [methionine](#), the s-adenosyl form of methionine, the [vitamin B6](#), the mineral [selenium](#), the [B vitamin riboflavin](#), as well as [whey](#) protein - all of these compounds and minerals may aid in increasing the production of glutathione in the body. [Sea Vegetables](#) and [Algae](#) are a great source of the amino acids needed for the production of Glutathione. A great source of amino acids from [Nature's Sunshine](#) is [Greenzone Capsules](#), which is a "wholefood supplement" meaning that it is a "complete protein source". It's a great source of [B-Vitamins](#), **sea vegetables** and **algae** like: [Spirulina](#), [Chlorella](#), [Kelp](#).

The use of intramuscular or intravenous injections of glutathione is suggested by other medical professionals, as they believe such a method of supplementation can greatly help to reduce the side effects and increase the efficacy of glutathione absorption into the body.

The potent and powerful anti-oxidant action of glutathione is not doubted. The real pathways in which the compound works in the body and the main benefits of its use as a supplement are still not clear. Glutathione supplementation and its beneficial effects is supported by some evidence that suggests its potential usefulness in the management of some forms of cancers, as well as its use in the treatment of atherosclerosis, its treatment in treating [diabetes](#), as well as lung disorders. It is also thought to have potential as a supplement to treat [hearing loss](#) induced by noise, problems like [male infertility](#), as well as to help prevent or lessen the effect of various toxic compounds in the body. Glutathione is also believed to possess some anti-viral activity and could become useful in the treatment of viral diseases. [AIDS](#) associated cachexia is often treated using glutathione as a secondary supplementary compound.

## 1. L-Cysteine

### *What is cysteine?*

Cysteine is a sulfur-containing amino acid that occurs naturally in foods and can also be manufactured by the body from the amino acid [methionine](#).

### *What is the function of cysteine?*

- **Promoting Antioxidant Activity:** The antioxidant activity of glutathione is attributed specifically to the presence of cysteine in the compound.
- **Detoxification:** Cysteine is essential for having enough Glutathione levels for detoxification.
- **Help Eliminate Mucous:** Cysteine also has the ability to breakdown proteins found in mucous that settles in the lungs. As a result, this amino acid may be useful in the treatment of bronchitis and other respiratory problems.

### *What can high-cysteine foods do for you?*

- Help your body detoxify chemicals and heavy metals
- Protect cells from free radical damage
- Help breakdown extra mucous in your lungs

### *Food sources of Cysteine:*

Food sources of cysteine include [poultry](#), [yogurt](#), [egg yolks](#), [red peppers](#), [garlic](#), [onions](#), [broccoli](#), [Brussel sprouts](#), [oats](#), and wheat germ.

### *What factors might contribute to a deficiency of cysteine?*

The production of cysteine involves several nutrients. As a result, dietary deficiency of [methionine](#), [vitamin B6](#), [vitamin B12](#), s-adenosyl methionine (SAME) and [folic acid](#) may decrease the production of cysteine.

## 2. L-Methionine

### *What is Methionine?*

Methionine is one of eight "essential amino acids". Together with cysteine, methionine is one of two sulfur-containing [proteinogenic amino acids](#).

Protein is an essential component of the diet, because it provides the amino acids that the body needs to synthesize its own proteins. In traditional nutrition textbooks, there have always been two types of amino acids: essential amino acids and non-essential amino acids. Essential amino acids have been defined as those amino acids that our body cannot synthesize on its own. Essential amino acids must therefore be obtained from our diet. As traditionally defined, the eight essential amino acids are [isoleucine](#), [leucine](#), [lysine](#), [methionine](#), [phenylalanine](#), [threonine](#), [tryptophan](#), and [valine](#). There has been ongoing debate over the status of a ninth amino acid, [histidine](#). Because the body appears routinely unable to make sufficient amounts of histidine during certain periods of development, this amino acid has sometimes been classified as essential and sometimes not.

Nonessential amino acids have traditionally been defined as those that the body can manufacture on its own. It is therefore not necessary to obtain these amino acids from the diet. As traditionally defined, the nonessential amino acids include [glutamate](#), [alanine](#), [aspartate](#), and [glutamine](#), as well as [arginine](#), **proline**, **serine**, **tyrosine**, [cysteine](#), **taurine**, and **glycine**.

The body is only able to make the proteins it needs when there are sufficient quantities of all the necessary amino acids in the so-called "amino acid pool." If we are deficient in essential amino acids, the body will be unable to make proteins and will have to break down muscle proteins to obtain the amino acids it needs.

### *What is the function of Methionine?*

A notable role of methionine is its powerful [antioxidant](#) action against free radicals produced in the natural metabolic processes of the body. The amino acid methionine is also an excellent source for the essential mineral [sulfur](#), which quickly inactivates free radicals produced in the body. People affected by Gilbert's syndrome, which results in an anomaly of liver functioning are also benefited by supplements of the amino acid methionine. The amino acid is also required during the synthesis of [nucleic acids](#), [collagen](#) and different [proteins](#) found in almost every [cell](#) of the human body - it is a constituent of many [enzymes](#) and proteins found in different parts of the body. Women who take oral contraceptives also benefit from supplements of the amino acid methionine as it promotes the excretion of [estrogen](#) from the body. The amino acid methionine also reduces the level of histamine present in the body, this property of the amino acid is considered very useful for people affected by [schizophrenia](#) and related conditions, in whom the levels of histamine are generally higher than those found in normal healthy adults.

The levels of the neuro-transmitting substances such as dopamine, nor-epinephrine and epinephrine are increased by methionine. The amino acid is also utilized in controlling [hypertension](#); it is used to lower the potency of allergic symptoms in people affected by such conditions. Methionine is also used to bring relief from chronic [pain](#) and as an aid to reduce all kinds of inflammation. It is also used to lower [cholesterol](#) and to protect the person from the

bad effects of aspirin and related chemicals. Methionine supplements are also beneficial in the treatment of [Parkinson's disease](#) and schizophrenia especially in the early stages.

The requirement for methionine tends to increase when accumulated levels of different toxic substances found in the body increase. Methionine in the body can be converted into the amino acid cysteine, which itself is a precursor of the vital compound called [glutathione](#). Glutathione is thus afforded a level of protection by methionine, as levels of methionine prevent the depletion of glutathione when the body becomes overloaded with accumulated [toxins](#) and chemicals. Glutathione is also a vital neutralizer of toxins present in the liver; the chemical thus protects the liver from the damaging effects of toxic compounds produced as a result of general metabolism.

Methionine is indeed a precursor of glutathione but the metabolic transformation of methionine into glutathione is a complex process which has the potential for "going astray". For example, high methionine intake in the diet, if combined with deficiency in [folic acid](#), [vitamin B6](#) and [vitamin B12](#) levels in the body, can lead to a great increase in the conversion of methionine to the compound called homocysteine. Supplementing with B-Complex vitamins helps to prevent high levels of homocysteine. This compound is a chemical substance connected to [heart disease](#) and [stroke](#) in patients.

### *Food sources of Methionine:*

Methionine is not synthesized in the human body and is considered to be an essential amino acid. It needs to be obtained in the diet from methionine rich food sources or via dietary supplements of methionine or protein rich complexes. Food sources which abound in methionine include foods such as [beans](#), eggs and fish, various lentils, poultry and meat, [onions](#) and [garlic](#), [soybeans](#), [seeds](#) and yogurt. Sea Vegetables are a good source of this amino acid. Combing various sources of cereal (methionine) and legumes (lysine), provides a [complete protein](#).

Methionine is used by the body to synthesize a particular molecular brain food called choline. Diets must be supplemented either with [choline](#) or [lecithin](#) - another compound high in choline - so as to ensure an adequate supply of methionine at all times.

### **3. Melatonin**

[Melatonin](#) is produced by the pineal gland in the brain and has many roles in the body, one being its ability to raise glutathione levels in certain tissues of the body, including brain, liver, and muscle tissue. Melatonin can also be produced by the amino acid [Tryptophan](#). Eating foods **high in Tryptophan** will therefore **help to increase Melatonin levels**. Tryptophan raises levels of the neurotransmitter, [Serotonin](#), which then can be converted to Melatonin.

Most protein-based foods or dietary proteins are **great sources of Tryptophan**. Foods high in Tryptophan include: [chocolate](#), [oats](#), [durians](#), [mangoes](#), dried [dates](#), [milk](#), [yogurt](#), [cottage cheese](#), [red meat](#), [eggs](#), [fish](#), [poultry](#), [sesame](#), [chickpeas](#), [sunflower seeds](#), [pumpkin seeds](#), [spirulina](#), and [peanuts](#). The nutrients [Vitamin B6](#), [vitamin C](#), [folic acid](#) (B9) and [magnesium](#) are necessary for the metabolism of tryptophan, therefore eating food sources of these nutrients is essential.

Concentrations of Melatonin increase in the body as night approaches, with concentrations being 10 times higher at night versus the day. As night approaches, signals are sent to the

brain to produce more melatonin, and this can cause the onset of sleepiness. Therefore, melatonin is often promoted as a sleep aid.

### ***Food sources of Melatonin:***

There are some foods that contain small amounts of melatonin. Cherries are one of the few known food sources of melatonin, a potent antioxidant produced naturally by the body's pineal gland that helps regulate biorhythm and natural sleep patterns. Eating cherries can be a natural way to boost your body's melatonin levels to hasten sleep and ease jet lag.

Oats, sweet corn, and rice are also considered good sources of melatonin. However, to get the same amount of melatonin that is found in a supplement pill, you would need to eat about 20 bowls of oats. Ginger, tomatoes, bananas, pineapples, apples, oranges, strawberries, kiwifruits, peppers, spinach and barley also contain small amounts of melatonin. Other foods that contain melatonin include almonds, *pimpinella peregrina* (the dried root), sunflower seeds, fennel seeds, lemon verbena (the young plant), balm mint (the young plant) and green cardamom seeds. Most seeds can be found at your local health food store and some farmers markets.

## **4. Glutamine**

Glutamine is an amino acid found in abundance in our body. It is tremendously beneficial to the body and is easily found in a healthy diet. Also, supplemental glutamine must be kept absolutely dry or it will degrade into ammonia, a toxin to the body. Due to its abundance in a healthy diet and the risks of storing it, glutamine is not an ideal supplement.

### ***What high-glutamine foods can do for you:***

- Maintain the health of your intestinal tract
- Help your body produce *glutathione*, a key antioxidant nutrient
- Ensure proper acid-base balance in your body
- Help maintain your muscle mass

### ***How it Functions:***

Glutamine is best known for its ability to serve as a source of fuel for the cells that line the gastrointestinal tract. More specifically, glutamine is the preferred fuel source for cells lining the small intestine. By nourishing these cells, glutamine helps maintain the health and integrity of the gastrointestinal tract. A healthy gastrointestinal tract is vital to preserving overall well-being, as the lining of the gastrointestinal tract serves as a first line of defense against disease-causing microorganisms and also minimizes the absorption of potentially allergenic molecules. Glutamine also serves as a source of fuel for muscle and immune cells.

In addition, glutamine plays a role in maintaining the body's proper acid-base balance. Glutamine is synthesized from glutamate and ammonia. Ammonia is a toxic waste compound with a high pH value, meaning that it is basic (as opposed to acidic). When ammonia levels are elevated, the body clears ammonia from the blood by synthesizing glutamine. If the blood is too acidic (pH too low), the body can break down glutamine into glutamate and ammonia to increase the pH of the blood.

**Glutamine also serves as precursor to the antioxidant glutathione**, participates in glycogen synthesis (the storage form of carbohydrate), and provides nitrogen compounds for the manufacture of nucleotides which are used to make DNA and RNA.

### *Food sources of Glutamine:*

Food sources of Glutamine include most high-protein foods including beef, chicken, fish, beans, and dairy products.

## **5. Lipoic Acid (alpha-lipoic acid)**

[Lipoic Acid](#) occurs naturally in the body but can also be taken as a supplement with effectiveness. This supplement works well in conjunction with healthy levels of glutathione but studies show that if taken by a person whose glutathione levels are too low, Lipoic Acid actually promotes oxidation.

### *Food sources of Glutamine:*

Food sources of lipoic acid are not well researched. In general, however, two categories of lipoic acid-containing foods have been identified.

**Green Plants:** The first category includes green plants which have a high concentration of chloroplasts. Chloroplasts are key spots for energy production in plants, and they require lipoic acid for this activity. For this reason, broccoli, spinach, and other green leafy vegetables like collard greens or chard are food sources of lipoic acid.

**Animal Foods:** Animal foods constitute the second category of lipoic acid sources. Once again, the cell's energy production mechanisms are involved. Mitochondria are critical energy production spots in animal as well as plant cells, and the main location for finding lipoic acid. Body tissues with lots of mitochondria (like the heart, liver, kidney, and skeletal muscle) are good spots for finding lipoic acid, so consumption of these foods (for example, calf's liver or round steak) also provides lipoic acid. Yeast has also been shown to contain this vital nutrient.

## **6. Silymarin (milk thistle)**

[Milk Thistle](#) is an herbal extract that seems to stimulate the growth and regeneration of damaged liver cells but also has been shown to significantly increase glutathione production. Great supplemental sources of Milk Thistle are: [Milk Thistle](#), [LivGd](#), [Greenzone Capsules](#) and [Enviro D-T-X](#).

## **7. Whey Proteins**

Fresh or "bioactive" milk [whey](#) contains potent glutathione precursors. Unfortunately, by the time milk reaches your table, it has been pasteurized and has lost its bioactivity, and its glutathione enhancing benefits. However, a [nutraceutical](#) is available which is essentially the whey proteins harvested from milk and kept in a bioactive or undenatured state. There are no known side effects associated with taking bioactive whey proteins and, since there is no lactose in whey proteins, lactose intolerant people are not adversely affected. Make sure to choose a whey supplement from an organic source, free of hormones and pesticide residue. A great choice is [Nutriburn](#) from [Nature's Sunshine](#).

## **SPECIAL NOTE:**

The long term use of supplements should be used in consultation with appropriate health professionals. Eating a balanced diet appropriate for you metabolic and blood type, in conjunction with exercise and emotional healing, is the safest way to be healthy.

**For more information on Amino Acids, click [here](#).**

**Click [here](#) for instruction on how to order any of the above mentioned herbal remedies.**

## **Reference websites:**

<http://inflammation911.com/7-natural-ways-to-increase-glutathione-production/>

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[http://en.wikipedia.org/wiki/Milk\\_thistle](http://en.wikipedia.org/wiki/Milk_thistle)

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