

When is an antioxidant
more than
an antioxidant?

When it's
glutathione.

When is glutathione
more than a multitasking
master antioxidant?

When it's


Setria[®]
Glutathione

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WholeFoods MAGAZINE
Informing and Educating Natural Products Retailers On Dietary Supplements, Herbs, HABA, Homeopathy, Foods

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The human body creates its own antioxidant commander that rallies other antioxidants to vanquish free radicals. Glutathione (GSH) also leads the charge in encouraging the body to eliminate toxins, and bolsters resistance by stimulating production and activity of certain immune biochemicals.

In short, of all antioxidants, glutathione is quite the versatile multitasker, yet it is also somewhat vulnerable to modern lifestyle conditions. Therefore, finding a natural way to fortify and sustain the body's own manufacturing of glutathione is an attractive prospect.

Setria® Glutathione, manufactured by Kyowa Hakko Bio Co., Ltd., is a clinically studied and patented form of glutathione — and chiefly, it is the consumer's choice solution for enhanced wellness and vitality throughout all life stages.



Defining Glutathione

Glutathione is found in every cell of the body and is critical to preserving cellular integrity because every single cell needs it to maintain healthy structure and function. GSH is endogenously produced and utilized. We also maintain proper levels of glutathione by eating a healthy diet high in fruits, vegetables and lean protein. Diets are exogenous sources of glutathione independent of our endogenous production. The combination of the two help to maintain proper levels of glutathione.

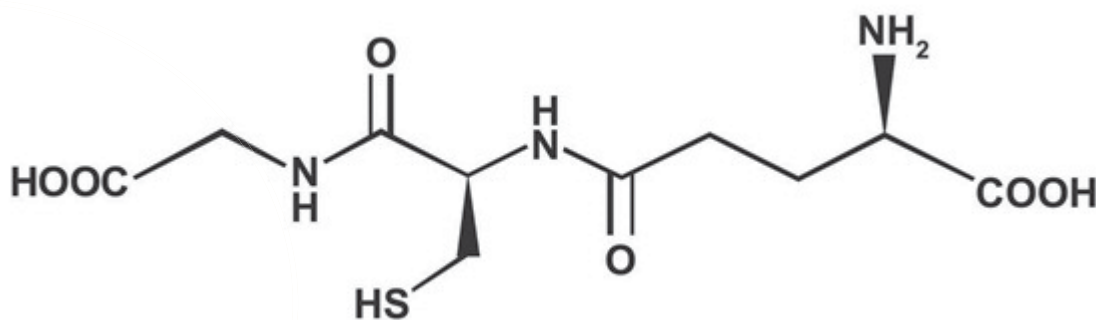
Glutathione is actually a melded molecule — a tripeptide — of the amino acids glutamate, cysteine and glycine. Let's take a closer look at the three amino acids that compose Setria[®] glutathione:

Glutamate: Glutamate is a key amino acid that acts as a significant mediator of common excitatory signals engendered by the central nervous system (CNS). Glutamate also supports healthy cognition and memory, and is involved in protein synthesis.

Cysteine: Enzymes rely upon cysteine for catalyzation, and this amino is also active in electron-transfer reactions. Cysteine also has antioxidant action due to its ability to be redox reactive. Because cysteine provides a necessary source of sulfur, it assists in healthy metabolism. Further, cysteine is a key detoxifying amino acid.

Glycine: Glycine figures prominently in numerous metabolic processes, and it also is a major inhibitory neurotransmitter in the brain stem and spinal cord. Glycine has been shown in numerous studies to protect against unhealthy inflammatory response and cytotoxicity, and also to support healthy immune modulation. Through a series of actions, glycine helps prevent formation of free radicals and pro-inflammatory cytokines.

Imagine how powerful the combination of glutamine, cysteine and glycine can be — this is Setria[®] glutathione.



Glutathione is vital to liver function.

Glutathione binds to organic toxic substances in order to excrete them more easily through kidneys and liver.*

Glutathione detoxifies kidneys, liver and intestines.*

Glutathione lines the GI tract to intercept and neutralize toxins.*

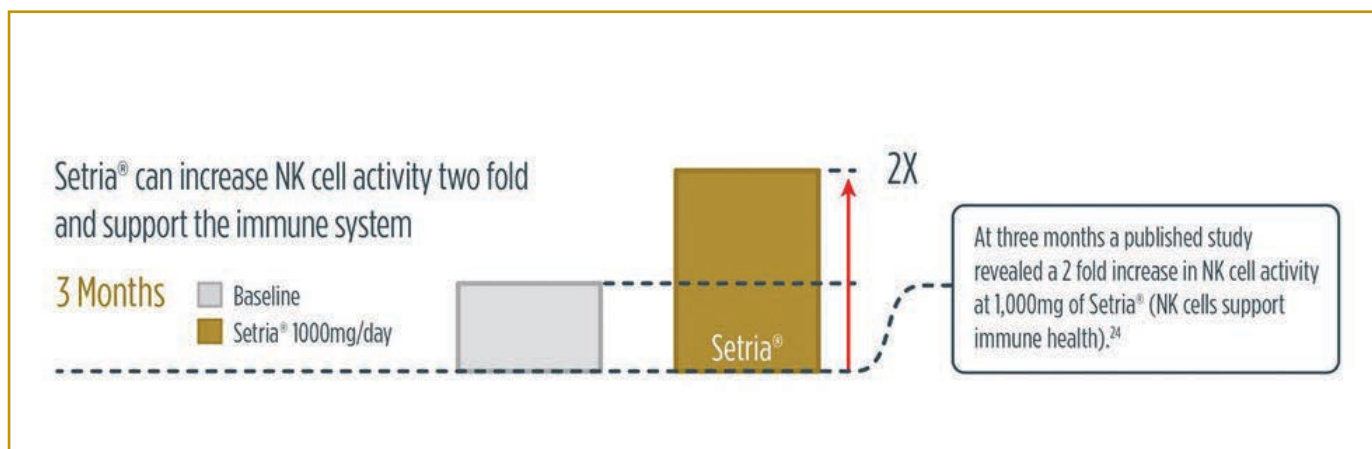
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Key Roles of Setria® Glutathione

Setria® glutathione possesses several potent and synergistic actions. It promotes healthy immune function, empowers internal detoxification processes, and serves as a leading antioxidant.*

As of summer, 2016, the number of published scientific articles that have focused on the roles of glutathione in human health is 126,494. Glutathione has been investigated for its roles in numerous disease states, and for its overall efficacy in supporting necessary biological functions that create and sustain homeostasis.

Immune Health: Setria® glutathione supports healthy immunity through its ability to stimulate production and activity of natural killer (NK) cells.* Further, glutathione helps increase lymphocytes (white blood cells) needed for appropriate immune response.* One epidemiological study suggested that those individuals who ingested higher amounts of glutathione from the diet (ie, fruits and vegetables) had reduced risk of developing oral cancer (1,2).*



Detoxification: Setria® glutathione is practically peerless in its ability to identify and eliminate toxins, chemicals and potential carcinogens that have made their way into the body and have become absorbed. Glutathione stores are most abundant in the liver and kidneys — the primary detox and elimination organs. Interestingly and noteworthy for potential formulas targeting allergy symptom relief is that healthy lung lining fluid, which protects against inhaled toxins and pollutants is high in glutathione. It has an affinity for storing in the GI tract, specifically the intestinal lining in order to prevent absorption of toxins.*

Yet another detoxification activity performed by Setria® glutathione is its ability to protect DNA against damage or mutation caused by harmful chemicals, environmental agents or damaging lifestyle habits (3).

Key Roles of Setria® Glutathione

Antioxidant Protection: Glutathione not only speedily neutralizes free radicals by itself, it also reactivates vitamins C and E, extending their own abilities to scavenge and neutralize oxidants.

An antioxidant is characterized by its ability to halt the electron-theft process of oxidation. A molecule that originally lacks an electron will steal one from an adjacent molecule, leaving that one bereft of an electron, and this one follows suit by thieving an electron from its own neighbor, causing a nefarious chain reaction. Antioxidants donate electrons thereby halting the oxidation process, and restoring protective balance.

Glutathione also maintains a balance of oxidative and reduction processes in cells (electron transfer), a process known as redox balance. The essence of life (and health) itself depends upon cells' ability to maintain the appropriate redox balance. Glutathione protects cells by maintaining redox balance, both inside the cells and on their surfaces. When this is disrupted, protein functions fail and cells die.*

Skin Health: Skin shows its aging through loss of elasticity and breakdown of collagen fibers due to free-radical damage. That damage is commonly caused by too much sun exposure, pollutants, poor diet as well as cigarette smoking. Setria® glutathione, through its masterful antioxidant ability, can preserve skin health and appearance.*



Key Roles of Setria® Glutathione

Setria® glutathione can also lighten skin tone. This is desired by many darker-complected individuals spanning the globe. Glutathione is widely known to modulate melanogenesis (the creation of melanin, or pigmentation.) Researchers conducted a randomized, double-blind, two-arm, placebo-controlled study with 60 healthy medical students who consumed either 500 mg/day glutathione capsules, in two divided doses, or placebo for four weeks. The researchers mainly focused on mean reduction of melanin indices though they also looked at how glutathione may or may not affect sun spots (UV-induced melanin deposits.) At the study's end, melanin indices saw a statistically significant decrease across all six sites measured in the glutathione group (4).*





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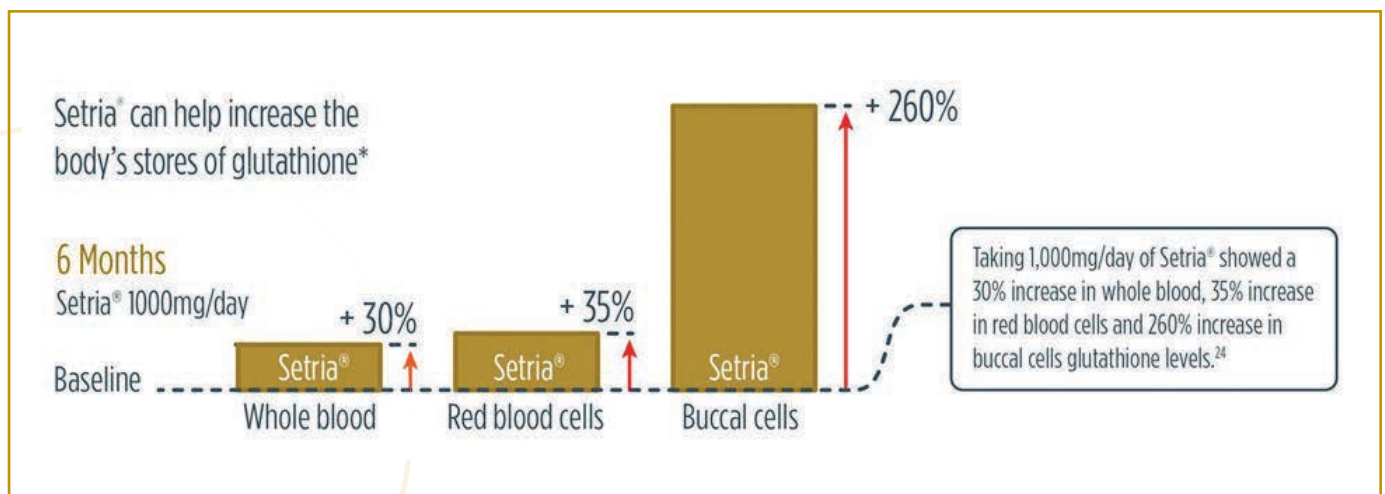
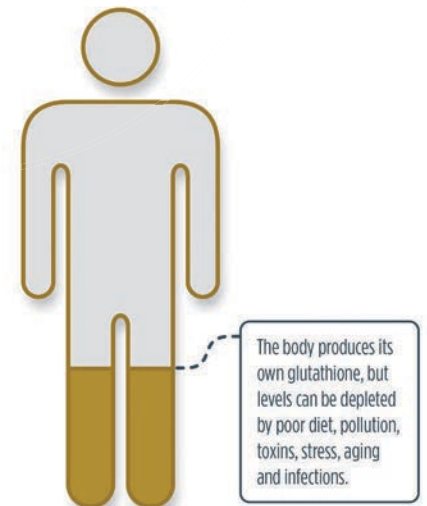
Why Glutathione Decreases

An individual's entire glutathione store turns over and fluctuates daily as this tripeptide is utilized and re-synthesized. Additionally, to help maintain glutathione, adequate amounts should be acquired from the diet. But, if consumers are not regularly eating high amounts of fruits and vegetables every day, their glutathione stores may likely be low to begin with. And because glutathione is also present in lean meats, vegetarians and vegans are at risk for low circulating levels.

However, one research team found that reactive chemicals formed through food processing can destroy up to 150 mg of valuable GSH. They estimated the amount of GSH needed per day to counteract this occurrence may be greater than 300 mg (3).

A later study looked at the relationship between enhanced GSH dosages to quantifiable levels of markers of immune and overall health in 54 healthy adults. The placebo-controlled trial used 250 mg Setria[®] glutathione and 1,000 mg Setria[®] glutathione for comparison. After six months of supplementation in both Setria[®] groups, GSH levels were increased in blood and erythrocytes in a dose-responsive manner. The high-dose Setria[®] group showed maximum increases of 30-35% in RBC, plasma, and lymphocytes and 260% in buccal cells. Further, several immune function markers were also examined, and natural killer (NK) cytotoxicity was enhanced two-fold in the high-dose group after only three months of GSH supplementation (5).*

There is a wide variety of common conditions that deplete glutathione, therefore, most adults can certainly benefit from increasing glutathione consumption, either through diet, supplementation or both. Below are the most common causes of glutathione depletion.



Why Glutathione Decreases

Mornings. Glutathione levels are lowest in the morning, after the dawn. Researchers have found that the glutathione cycle is diurnal, like humans. Stores increase in a spiked pattern about six hours after each meal and peak between 2:00 and 3:30 in the morning during slumber, followed by a steep decline (6).

This cycle results in a relative deficiency of glutathione in the morning hours that may extend into the afternoon. In people over age 60, there is a more pronounced difference between the glutathione peaks and valleys, which could be important given that the glutathione “valleys” are periods of vulnerability for oxidative stress and age-related chronic conditions.

Aging. As with many de novo biochemicals, production of glutathione declines with age. According to one study, glutathione begins to decline in one’s mid-40s, and that decline accelerates quickly after about age 60 (7). A contributing factor is the aging body’s decreased enzyme availability, and thus activity thereof, as well as a weakened ability to achieve healthy glutathione synthesis.



Why Glutathione Decreases

Through time, as glutathione levels dwindle, the body becomes more vulnerable to damage resulting from oxidative processes. Of the more than 120,000 studies, many suggest that inefficient glutathione levels are implicated in the onset of heart disease and age-related vision problems, such as macular degeneration (8, 9, 10).

To hit home the point of glutathione levels equating to overall health status, one study showed that higher glutathione levels in older people were indicative of good health status. This was assessed using multiple measures, including but not limited to higher scores of self-rated health, lower cholesterol and blood pressure numbers, lower body mass index and fewer number of illnesses reported. In contrast, those individuals in the study who exhibited lower glutathione levels showed more incidence of overall poorer health and attendant age-related conditions such as heart disease, diabetes and arthritis (11).

And the evidence continues. A study of 87 women aged 60 to 103 suggested that favorable glutathione levels were found in long-lived women who were in excellent physical and mental health (12).

Poor Diet. Years of poor diet impact health status and well-being in myriad ways, as we all know. But because glutathione is found so abundantly in mother nature's pantry — fruits and vegetables — it is logical to equate good glutathione status with abundant daily or regular consumption of fruits and vegetables.

The dramatic irony is that this message of healthy eating is so ubiquitous, and just about every American is aware of the fact that an apple to zucchini a day keeps the doctor away, yet processed and junk food products as well as fast food outlets are launched with frightening frequency because that's what many Americans are eating to any varying degree. Within the realms of processed and fast foods, glutathione is a rare resident: many diets commonly consumed in the U.S. provide inadequate glutathione to support optimal health.

But this does indeed make the perfect case for developing a Setria® glutathione supplement, fortified food or beverage, as they may become crucial sources for this critical antioxidant.

Damaging lifestyle habits. Lifestyle habits such as smoking and excessive alcohol consumption are detrimental to glutathione status because they dramatically increase the demand for protection. High levels of glutathione are normally maintained in the fluid lining of the lungs (alveolar fluid) in order to detoxify and neutralize harmful inhaled compounds. Glutathione is extensively oxidized in smokers compared to nonsmokers (13).

Excessive alcohol consumption depletes glutathione stores in the liver and also places an oxidative burden on the lungs, which is compounded in people who also smoke. It is known that alcohol abuse can cause acute respiratory distress syndrome, and researchers believe that alcohol can cause up to as much as 90 percent of glutathione depletion in the alveolar space (14). Another reason to encourage folks who social drink but smoke, glutathione defenses are severely compromised (15).

Why Glutathione Decreases

Obesity. Being overweight or obese can be characterized by oxidative stress caused by compromised metabolic processes, creating low-level inflammation in fat stores. Already oxidatively stressed obese and overweight individuals also exhibit low levels of glutathione among other antioxidants. Further, chronic oxidative stress in obese and overweight people is a factor that may affect normal blood sugar levels (16, 17, 18, 19).

High blood sugar. Not only does oxidative stress factor in blood sugar-related conditions, hyperglycemia encourages metabolic changes that increase the number of free radicals. Researchers showed that compared to healthy controls, those individuals with higher blood sugar had lower glutathione levels. In one study of diabetic animals, glutathione suppressed oxidative stress, notably in the lens of the eye (20).

According to one study, previous research correlated high blood glutathione levels with a longer life span in animal models, and in healthy elderly people. The researchers sought to discern glutathione levels in unhealthy individuals. Blood samples from 74 adults aged 21 to 89 with chronic illnesses and 32 healthy controls were analyzed for reduced and oxidized glutathione.

The researchers found that significant total glutathione decreases from the control levels were exhibited in 36% of the unhealthy individuals (21). Another study strongly suggested that glutathione deficiency causes cells to become more vulnerable to oxidative stress, which contributes to chronic and/or degenerative conditions. Further, the authors noted, many researchers believe that glutathione deficiency is a factor in the development of certain specific conditions (22).

When taking into account the circumstances that deplete glutathione, plus the fact that glutathione levels will drop rather quickly if not replenished, it becomes evident that millions of Americans can satisfactorily benefit from adding Setria® glutathione to their daily health regimens.



Why Setria® is Superior

Setria® glutathione is a simple daily solution for modern lifestyles that introduce various environmental stressors that deplete supportive biochemicals while increasing damaging or irrelevant ones, creating a state of potentially damaging imbalance.*



Setria® glutathione is manufactured through a patented fermentation process to yield high purity. This proprietary technology, several years in the making, further distinguishes Setria® glutathione from generic glutathione.

Setria[®] Glutathione at a Glance

Potent tripeptide – glutamate, cysteine and glycine

Patented fermentation process yielding high purity

Clinically studied; generally supported by more than 80,000 studies

No additives, artificial flavors or preservatives

Vegetarian

Allergen free

Kosher

Manufactured in GMP facility

Supported by significant consumer and retailer campaigns

Setria®: Superior Absorption

There are several misconceptions about supplemental glutathione that can be easily debunked. “Glutathione is not absorbed or poorly absorbed,” and “glutathione cannot penetrate the gastrointestinal tract because it is so vulnerable it’s destroyed.”

Plasma levels of glutathione are measurable but are not particularly useful in assessing the health of the total glutathione system, because glutathione is distributed unevenly throughout the body and plasma levels are not indicative of levels in other tissues. Glutathione tends to go where it is needed and it breaks down quickly if not stored correctly. Therefore, scientists sought and recently created a way to measure redox balance, which gives a more accurate picture of how well the body is producing and using glutathione. Redox balance is assessed by measuring the ratio of glutathione to oxidized glutathione products in the blood. A higher ratio indicates better protection and the potential for better health (23).

Researcher and redox expert Dean P. Jones, in a published review, expressed, “The common assumption is that dietary or supplemental glutathione is not available for use by the human body because the intestines contain an enzyme (-glutamyl transpeptidase; GGT) that degrades glutathione. However, a substantial amount of scientific evidence shows that supplemental glutathione is bioavailable” (24, 25).

One researcher sought to determine the efficacy of Setria® glutathione supplementation at elevating glutathione body stores in healthy adults. The randomized, double-blind, placebo-controlled trial with 54 healthy adults gave either 250 mg Setria®, 1000 mg Setria® or placebo daily for six months followed by a one-month washout. In both Setria® groups (low and high dose), the researchers found increased glutathione levels in blood and erythrocytes, although there were no marked changes in protein-bound glutathione levels. Further, in the 1,000 mg Setria® group, there were maximum increases of 30-35% in RBC, plasma, and lymphocytes and 260% in buccal cells. Another attractive benefit for those in the 1,000 mg Setria® group was that after three months of supplementation, participants’ natural killer cytotoxicity was enhanced more than two-fold*.

Lead investigator Dr. Richie concluded, “Altogether, these findings are consistent with previous pre-clinical studies and indicate that long-term oral administration glutathione is an effective means of enhancing body stores of glutathione. Oral glutathione administration is an effective means of chronically enhancing body stores of glutathione and may also enhance immune function” (26).



No matter one's age or where or how one lives, modern life is abundant with stress both external and internal. The natural compound, glutathione, is tailor-made to provide healthy balance and outstanding resistance. A tremendous amount of clinical research has validated that just this one supplement supports healthy aging through accelerating the body's natural detoxification process ("cleaner insides"), increases antioxidant protection, and promotes more effective immune response. And with the fact that Setria® glutathione has been shown to have superior absorption, hence, utilization in the body to obtain these benefits, it is the sensible and logical glutathione.

Setria® Study Results

1

Setria® increased whole blood GSH levels

2

Setria® increased plasma GSH levels

3

Setria® increased red blood cell GSH levels

4

Setria® increased lymphocyte GSH levels

5

Setria® increased NK cell activity

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