



Glutathione: *Reduced glutathione (GSH), Oxidized glutathione (GSSG)*

Common Indications:

- Powerful Antioxidant
- Hepatic support and detoxification from chronic use of alcohol, drugs (both prescription and recreational) and other environmental chemicals
- Improved immune response and wound healing

General Comments:

Glutathione is the product of 3 amino acids, cysteine, L-glutamine and glycine. Glutathione is a primary protectant of skin, lens, cornea, and retina against radiation damage, and the biochemical foundation of P450 detoxification in the liver, kidneys, lungs, intestinal epithelia, and other organs.

Benefits & Mechanism of Action:

Antioxidant

Glutathione helps support the immune system. It is a key component of the body's antioxidant system and is a substrate in the conjugation and reduction reactions in the body.^{1,2}

Hepatic support and detoxification from chronic use of alcohol, drugs (both prescription and recreational) and other environmental chemicals

Detoxifies many compounds in the body, especially in the liver. Helps protect the body against toxins from cigarette smoke, excess alcohol, overdoses of aspirin, and exposure to radiation.^{3,4}

Improved immune response and wound healing

Glutathione helps transport some amino acids across cellular membranes and is involved in the synthesis of fatty acids. Glutathione has also demonstrated reduced toxicity and improved the therapeutic effects when supplemented with certain chemotherapies.^{5,6,7,8,9,10}

Dose: 500-3,000mg daily in divided dosages

- Individuals with severe glutathione depletion may need larger dosages.

Symptoms of Deficiency:

- Decreased macrophage activity
- Weakened immune system
- Increase in free radical damage throughout the body, especially in the membranes of red blood cells and mitochondria
- Decrease in the body's ability to detoxify many compounds in the liver, including drugs and environmental chemicals
- Alterations in liver enzymes
- Possible hair loss and baldness
- Increased sweating and fatigue
- Increase in oxidized cholesterol, leading to an increase in cardiovascular complications.

Conditions that leave a patient with an increased need for glutathione include:

- Ultraviolet and other radiation
- Viral infections
- Environmental toxins like pesticides, smoking, household chemicals and heavy metals
- Surgery
- Chronic inflammation
- Burns
- Septic shock
- Diabetes and insulin resistance
- Dietary deficiencies of GSH precursors and enzyme cofactors
- Older age

Cautions & Side Effects: There are no known toxicities when using glutathione as a dietary supplement.

Food Sources: Foods containing glutathione include avocado, watermelon, asparagus, grapefruit, potato, acorn squash, strawberries, oranges, tomatoes, cantaloupe, broccoli, okra, peaches, zucchini, and spinach.

Nutrient Interactions:

- Alpha-lipoic acid
 - Supplementation with alpha-lipoic acid may increase absorption of glutathione.
- Green tea
 - Supplementation with green tea may increase absorption of glutathione.
- Melatonin
 - Supplementation with melatonin may increase absorption of glutathione.

- S-adenosylmethionine (SAME)
 - Supplementation with SAME may increase absorption of glutathione.
- Whey protein
 - Supplementation with whey protein may increase absorption of glutathione.
- Milk thistle seed extract
 - Supplementation with milk thistle seed extract may increase absorption of glutathione
- N-acetyl cysteine
 - Supplementation with N-acetyl cysteine may increase absorption of glutathione.

References:

Antioxidant

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Improved immune response and wound healing

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