PROTOCOL FOR LIFE BALANCE®

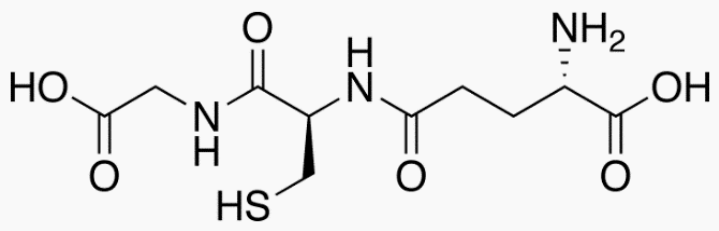
Dietary Supplement Information
for Physicians with Naturokinetics®
PRODUCT CODE: P0104
CATEGORY: HEALTHY AGING*

Glutathione 500 mg

TECHNICAL SUMMARY

Glutathione is a small peptide molecule composed of three amino acids: glutamic acid, cysteine, and glycine. It is synthesized by every cell of the body for the proper detoxification of metabolic waste products and is essential for healthy immune system function.* Glutathione also plays a critical role in the body's defense system against oxidative stress by acting directly to neutralize free radicals, as well as by maintaining the activity of vitamins C and E.* This product has glutathione in its reduced, active form for optimum bioavailability and includes milk thistle extract and alpha lipoic acid as complementary ingredients.*

Structure Formula:



Chemical Name: γ-L-Glutamyl-L-cysteinyl-glycine

Allergen and Additive Disclosure: Not manufactured with wheat, gluten, soy, corn, milk, egg, fish, shellfish, or tree nut ingredients. Produced in a GMP facility that processes other ingredients containing these allergens.

Delivery Form: Vegetable capsules

ROLE AS NUTRIENT/FUNCTION

Glutathione (GSH) protects cells against toxicants and is involved in the metabolism of endogenous and xenobiotic compounds through the formation of conjugates.* GSH is also involved in the three dimensional shaping of proteins, which is a very important aspect of the maintenance protein functions.*

When cells are subjected to a physiological stress, existing intracellular GSH is typically initially consumed in reactions that protect them by removing the deleterious compounds responsible for the cellular stress.* In a second phase, GSH is replaced either by regeneration (reduction of glutathione disulfide) or *de novo* synthesis. GSH also play a central role in signaling pathways involving reactive oxygen species.*

GSH's function within cells has been extensively studied and its best known function is cellular defense against typical oxidative stress where GSH is a substrate for the selenium protein glutathione peroxidase, one of the main enzymes responsible for the reduction of H_2O_2 and lipid hydroperoxides.*

NATUROKINETICS®

Liberation: The disintegration of the vegetable capsule using a USP testing method of disintegration occurs between zero and 60 minutes.

Absorption: After oral administration, glutathione is absorbed in the small intestinal walls via active transport systems. Following a single oral administration of 3 g of GSH, a transient increase of plasma glutathione levels was detected in 43% of tested volunteers. Following a prolonged glutathione supplementation (250 mg/d or 1 g/d for 6 months) in 54 healthy adult volunteers, plasma and intracellular GSH concentrations were significantly higher in the 1 g/d dose group at 1, 3, and 6 months and returned to the baseline one month after discontinuation (Figure 1).

These results highlight the importance of taking GSH on a regular basis to get the full benefits of glutathione supplementation.

Supplement Facts

Serving Size 1 Veg Capsule

Amount Per Serving	
Glutathione (Reduced Form)	500 mg**
Milk Thistle Extract (*Silybum marianum*) (Fruit/Seed) (Standardized to 80 mg Silymarin Flavonoids – equivalent 80%)	100 mg**
Alpha Lipoic Acid	50 mg**

** Daily Value not established.

Other ingredients: Hypromellose (cellulose capsule), Microcrystalline Cellulose, Magnesium Stearate (vegetable source) and Silicon Dioxide.

- **Free Radical Protection***
- **With Milk Thistle Extract & Alpha Lipoic Acid**

SUGGESTED USAGE: Take 1 capsule 1 daily, or as directed by your healthcare practitioner.

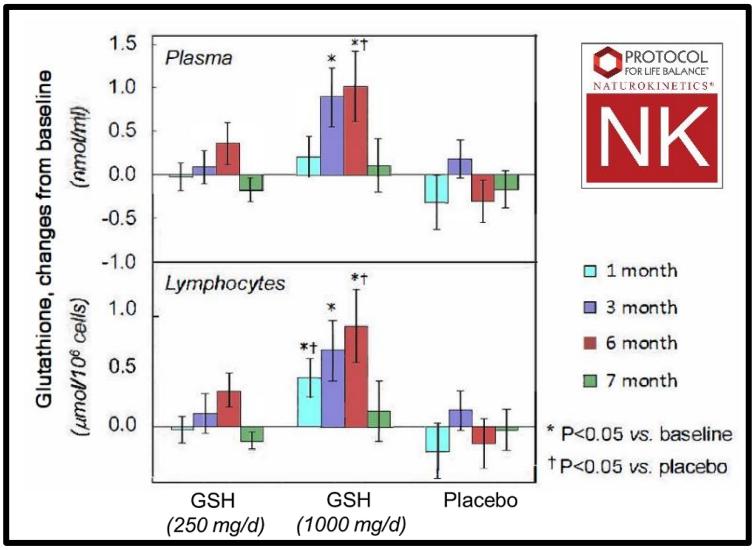


Fig. 1. Change in plasma and lymphocyte GSH level (from baseline, mean ± SD) during 6 month and one month after discontinuation of supplementation with 2 doses of GSH (250 mg/d or 1,000mg/d) in healthy adult volunteers.

*These statements have not been evaluated by the Food and Drug Administration. This product is not intended to diagnose, treat, cure, or prevent any disease.

Distribution: In animal models, after oral ingestion, GSH can be found in the jejunum, ileum, lung, liver, heart, and brain.

Metabolism: Glutathione is mainly metabolized by γ-glutamyltranspeptidase, which can be found throughout the body including in the intestinal wall. While the presence of this enzyme in the intestine can be seen as a limiting factor to the release of GSH to the general circulation, pre-clinical data suggest that the body is able to resynthesizes GSH within the intestine for liberation into the bloodstream.

Elimination: Glutathione is excreted predominantly in the urine. It is also eliminated in bile from the liver.

CLINICAL VALIDATION

Free radical protection and immune system support.* In a 6-month randomized, double-blind, placebo-controlled clinical trial with 54 healthy adult volunteers, supplemental GSH of 250 mg/d or 1 g/d resulted in a significant decrease of the reduced GHS/oxidized GHS ratio vs. placebo group where no modification of this ratio was observed after 6 months of supplementation (this ratio is used as an indicator to redox status).* These results suggest that long-term supplementation with GSH may help to maintain normal oxidation status in healthy individuals.*

In the same study, several markers of immune function were measured in the blood. Notably, reseachers observed that after 3 months of supplementation with GSH (1 g/d) a significant increase in the activity of immune cells belonging to the innate immune system.* These results confirm previous laboratory experiments suggesting that GSH is an important element to support immune system function.*

SAFETY INFORMATION

Tolerability: Clinical trials have shown that oral administration glutathione is generally well tolerated up to 3 g/d for up to 6 months.

Contraindications: None known.

INTERACTIONS

Drug Interactions: Acetaminophen and ethanol may decrease the effects of glutathione.

Supplement Interactions: None known.

Interaction with Lab Tests: None known.

STORAGE

Store in cool, dry, and dark environment in original sealed container.

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