PROTOCOL FOR LIFE BALANCE®

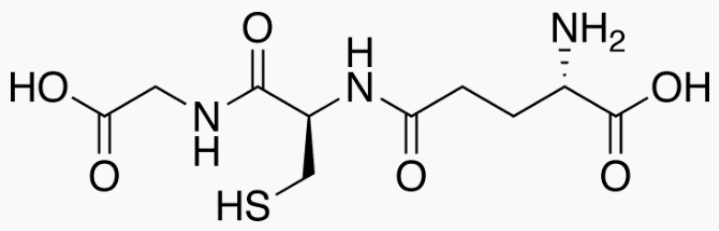
Dietary Supplement Information
for Physicians with Naturokinetics®
PRODUCT CODE: P0104
CATEGORY: HEALTHY AGING*

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

Supplement Facts

Serving Size 1 Veg Capsule

Amount Per Serving	
Glutathione (Reduced Form)	500 mg*
Milk Thistle Extract (*Silybum marianum*) (Fruit/Seeds) (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.

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).

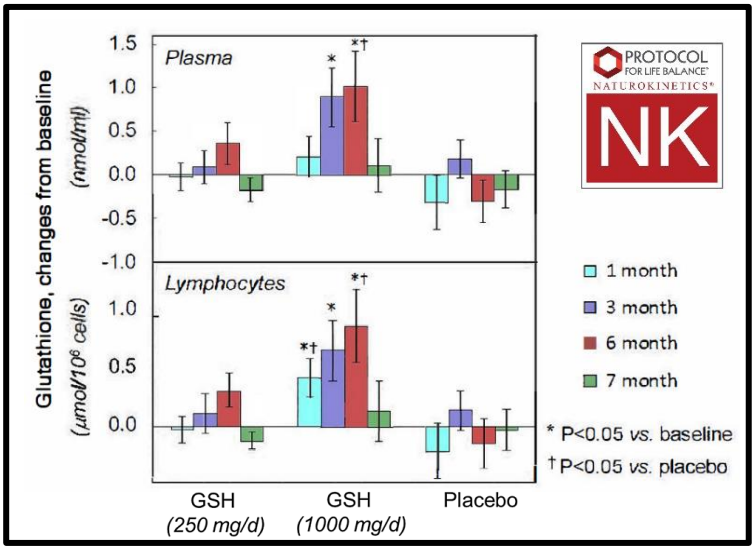


Fig. 1. Change in plasma and lymphocyte GSH level (from baseline, mean ± SD) during 6 month and one month after discontinuation of supplementation with 2 doses of GSH (250 mg/d or 1,000mg/d) in healthy adult volunteers.

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

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

*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.

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.