



Glutathione Precursors

DIETARY SUPPLEMENT

Supports formation of the key antioxidant compound glutathione

- Enhances free radical scavenging*
- Provides the three precursors needed to form glutathione within the body: N-acetyl-L-cysteine (NAC), glutamic acid and glycine*
- Includes α -lipoic acid

GENESTRA BRANDS Glutathione Precursors helps to protect against oxidative stress and supports glutathione formation. Glutathione, or γ -glutamyl-cysteinylglycine (GSH), is the primary intracellular antioxidant involved in preventing lipid and protein oxidation, and is a critical component in the enzymatic process used to detoxify hydroxide peroxide (H_2O_2).^{1,2} Cysteine, glutamic acid and glycine are the three essential precursors for endogenous glutathione production.³ Supplementation with NAC, cysteine, and glycine has been shown to increase GSH levels.⁴⁻⁶



Supplement Facts

Serving Size 1 Capsule/ Servings per Container 30

Each Capsule Contains

N-acetyl-L-cysteine (NAC)	200 mg*
L-glutamic acid	200 mg*
DL-alpha lipoic acid	200 mg*
L-glycine	100 mg*

* Daily Value not established

Other ingredients: Hypromellose, magnesium stearate

Recommended Adult Dose: Take one capsule daily with a meal or as recommended by your healthcare practitioner.

Product Size: 30 Vegetable Capsules **Product Code:** 10366



Scientific Rationale:

GSH is considered an important free radical scavenger. In addition to its antioxidant effects, it also plays a key role in amino acid transport across membranes, gene regulation, and protein synthesis and degradation.⁷ GSH synthesis occurs primarily in the liver, following hepatic uptake of its precursors cysteine, glutamic acid and glycine. As the intracellular pool of cysteine available for GSH formation is relatively small, cysteine is considered the rate-limiting factor for GSH production. Increased intake of cysteine (or its precursor NAC) has been shown to enhance GSH production. Conversely, oxidative stress and decreased protein intake are associated with reduced intracellular GSH concentrations.⁸

Aging is associated with increased oxidative stress, and elderly people tend to have lower GSH levels and GSH synthesis rates in comparison with younger adults. In a 2-week-long clinical study conducted on healthy elderly participants, dietary supplementation with NAC and glycine restored GSH

levels synthesis rates comparable to measurements obtained from a younger adult control group. Participants received 0.81 mmol cysteine/kg/day (as n-acetylcysteine) and 1.33 mmol glycine/kg/day for 2 weeks. At baseline and following supplementation, blood samples were obtained and analyzed to determine GSH synthesis rates in red blood cells, GSH levels, and plasma markers of antioxidant stress. In the elderly participants, GSH concentrations were approximately 46% lower and the absolute synthesis rate of GSH was approximately 68% slower, in comparison with a group of healthy younger (30-40 year old) controls. Following supplementation, both GSH concentrations and GSH synthesis rates matched the control group, and plasma oxidant stress biomarkers (plasma reactive oxygen metabolites, plasma F2-isoprostanes, and lipid peroxides) were significantly decreased.⁶

For educational purposes only. Do not distribute.

REFERENCES

1. Valencia E, Marin A, Hardy G. Glutathione—Nutritional and Pharmacological Viewpoints: Part II. Nutrition. 2001; 17: 485–486
2. Valencia E, Hardy G. Practicalities of glutathione supplementation in nutritional support. Current Opinion in Clinical Nutrition and Metabolic Care. 2002; 5: 321–326
3. Valencia E, Marin A, Hardy G. Glutathione—Nutritional and Pharmacological Viewpoints: Part III. Nutrition. 2001; 17: 696–697
4. Kasperczyk S, Dobrakowski M, Kasperczyk A, Ostalowska A, Birkner E. The administration of N-acetylcysteine reduces oxidative stress and regulates glutathione metabolism. Clinical Toxicology. 2013; 51: 480–486
5. Zembron-Lacny A, Słowinska-Lisowska M, Sygula Z, Witkowski Z, Szyzka K. Modulatory effect of N-acetylcysteine on pro-antioxidant status and

6. Sekhar RV et al. Deficient synthesis of glutathione underlies oxidative stress in aging and can be corrected by dietary cysteine and glycine supplementation. Am J Clin Nutr. 2011; 94: 847–853
7. Valencia E, Hardy G, Marin A. Glutathione—Nutritional and Pharmacologic Viewpoints: Part V. Nutrition. 2001; 17: 978
8. Wu G, Fang YZ, Yang S, Lupton JR, Turned ND. Glutathione Metabolism and Its Implications for Health. The Journal of Nutrition. 2004; 134: 489–492.

* 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.

This information is for practitioner use only.

Copyright © 2015 Seroyal. All rights reserved. No part of this information may be used or reproduced in any form or by any means, or stored in a database or retrieval system, or be distributed or replicated without express permission of Seroyal. Making copies of any part of this information for any purposes other than your own personal use is a violation of copyright law.

3297. Version 1.

US: (888) 737-6925 | www.seroyal.com **Seroyal**