

## Glutathione PLUS™

### DESCRIPTION

Glutathione Plus capsules, provided by Douglas Laboratories®, contain 50 mg of glutathione in its active reduced form, and 440 mg of N-acetyl-L-cysteine. Glutathione is a tripeptide with antioxidant properties, and N-acetyl-L-cysteine is a biologically active precursor for the intracellular glutathione.

### FUNCTIONS

Body cells and tissues are threatened continuously by damage caused by toxic free radicals and reactive oxygen species (e.g., peroxides) which are produced during normal oxygen metabolism, by other chemical reactions, and by toxic agents in the environment. Free radicals are capable of disrupting metabolic activity and cell structure. When this occurs, additional free radicals are produced which, in turn, can result in more extensive damage to cells and tissues. The uncontrolled production of free radicals is thought to be a major contributing factor to many degenerative diseases.

Glutathione is a naturally-occurring tripeptide of L-cysteine, L-glutamate and L-glycine. Glutathione is the essential co-substrate for two major antioxidant enzymes in the body; glutathione peroxidase and glutathione reductase. As such, glutathione offers one mechanism for scavenging toxic free radicals. Glutathione is well absorbed in the intestine, and enters the blood and other extracellular compartments where it exerts much of its beneficial antioxidant effects.

N-Acetyl-L-Cysteine is efficiently transported into the cell where it is readily converted to cysteine for glutathione synthesis. Thus, supplementation with N-Acetyl-L-Cysteine can help raise intracellular glutathione levels. N-Acetyl-L-Cysteine also appears to have antioxidant properties as such, and is a valuable sulfur donor for various metabolic needs.

### INDICATIONS

Glutathione capsules may be a useful nutritional adjunct for individuals who wish to increase their intake and synthesis of glutathione.

### FORMULA (#GSHP)

Each capsule contains:

Vitamin C (as L-Ascorbic Acid).....	10 mg
N-Acetyl-L-Cysteine .....	440 mg
Glutathione (reduced).....	50 mg

Other ingredients: bovine gelatin (capsule), cellulose, silica, vegetable stearate

### SUGGESTED USE

Adults take 1 capsule daily or as directed by a healthcare professional.

### SIDE EFFECTS

No adverse side effects have been reported.

### STORAGE

Store in a cool, dry place, away from direct light. Keep out of reach of children.

### REFERENCES

Anonymous: Cellular antioxidant status and human immunodeficiency virus replication. Nutr Rev 1992; 50:15-18.  
Aruoma OI, Halliwell B, Hoey BM, and Butler J: The antioxidant action of N-acetylcysteine: its reaction with hydrogen

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peroxide, hydroxyl radical, superoxide, and hypochlorous acid. Free Radical Biol Med 1989; 6:593-597.  
Holdiness MR: Clinical pharmacokinetics of N-acetylcysteine. Clin. Pharmacokinet. 1991; 20:123-134.  
Kamei A. Glutathione levels of the human crystalline lens in aging and its antioxidant effect against the oxidation of lens proteins. Biol Pharm Bull 1993;16:870-875.  
Reddy VN. Glutathione and its function in the lens--an overview. Exp Eye Res 1990;50:771-778.  
Ruffman R and Wendel A: GSH rescue by N-acetylcysteine. Klin. Wochenschr. 1991; 69:857-862.  
Sen CK, Atalay M, Hänninen O. Exercise-induced oxidative stress: Glutathione supplementation and deficiency. J Appl Physiol 1994;77:2177-2187.  
Smilkstein MJ, Knapp GL, Kulig KW, and Rumack BH: Efficacy of oral N-acetylcysteine in the treatment of acetaminophen overdose. N Engl J Med 1988; 319:1557-1562.  
Staal FJ, Ela SW, Roederer M et al. Glutathione deficiency and human immunodeficiency virus replication. Lancet 1992;339:909-912.  
White AC, Thannickal VJ, Fanburg BL. Glutathione deficiency in human disease. J Nutr Biochem 1994;5:218-226.  
Xie PY, Kanai A, Nakajima A, Kitahara S, Ohtsu A, Fujii K. Glutathione and glutathione-related enzymes in human cataractous lenses. Ophthalmic Res 1995;23:133-140.  
Zhang WZ, Augusteyn RC. Ageing of glutathione reductase in the lens. Exp Eye Res 1994;59:91-95.

**For more information on Glutathione Plus™ visit [douglaslabs.com](http://douglaslabs.com)**

† 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.

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Your patients trust you.**

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