

Product Profile

GSH COMPLEX[®] High Source of Nutritional Proteins

Typical Nutrient Composition Expressed per 100 grams of product

Calories	374
Calories from fat	3
Protein*	92.7 g
Total fat	0.3 g
Saturated fat	0.2 g
Cholesterol	10.0 mg
Electrolytes: Sodium	600.0 mg
Potassium	120.0 mg
Dietary fibers	0.0 g
Sugar	0.0 g
Total carbohydrates	0.0 g
Vitamin A	20.0 UI
Vitamin C	2.0 g
Vitamin D	15.0 UI
Iron	5.0 mg
Calcium	120.0 mg
Phosphorus	25.0 mg
Magnesium	15.0 mg
Moisture	5.0 g
Ashes	2.0 g

* GSH COMPLEX protein isolates are not denatured and are fully soluble over a pH range of 2.0-9.0.

Typical Amino Acid Profile

per 100 g powder

Essential amino acids*:	
Leucine	12.6 g
Isoleucine	5.0 g
Lysine	8.9 g
Histidine	1.5 g
Methionine	2.2 g
Phenilalanine	2.9 g
Threonine	4.9 g
Tryptophan	1.8 g
Valine	5.2 g
Cysteine/Cystine**	4.0 g

* Essential amino acids are not synthesized by the body in adequate amounts and are essential for good health. Therefore daily food intake of these amino acids is necessary in the diet.

** Cysteine/Cystine are precursors of the glutathione synthesis (L-glutamylcysteinylglycine). GSH COMPLEX® cysteine content is among the highest in the industry.

NOTE: Glutathione is scientifically known to enhance the immune system and prevent oxidative cell damage.

Other Amino Acids

per 100 g powder

Alanine	7.0 g
Arginine	1.8 g
Aspartic acid	9.3 g
Glutamic acide	13.2 g
Glycine	2.6 g
Proline	4.1 g
Serine	4.5 g
Tyrosine	2.7 g

Packaging Format

Plastic Bottle / 300 grams (10.5 OZ)

Storage Conditions

Dried dairy products can absorb odors and moisture. Therefore adequate conditions are essential. Storage conditions include a temperature below 25 °C, relative humidity below 65% and an odor-free environment. Stock should be used in rotation, preferably within twelve (12) months.

Protein Content & Nutrition Value

GSH COMPLEX® proteins provide amino acids that are required for growth and maintenance of the human body. However, proteins from different sources are composed of different amino acids. Because of the differences in composition, not all proteins can meet the needs of the human body. It is important to determine the quality of proteins that are utilized in food formulations.

The Food and Agriculture Organization (FAO) established a new method to compare the quality of various proteins based on the amino acid requirements of humans. This method, known as protein digestibility corrected amino acid score (PDCAAS) is an internationally recognized method. According to this method, an ideal protein that meets all the essential amino acid requirements of human body will have a value of 1.0.

PDCAAS values of greater than 1.0 indicate a high digestibility and a high ratio of amino acid profile compared to FAO's reference profile. GSH COMPLEX® exceeds the PDCAAS value.

The nutritional information herein is provided on typical composition of the product. This material is provided for informational purposes only and not as a specification.

Related Scientific Health Articles

Protein quality:

- Bourdon E, Blache D, 2001. *The importance of proteins in defense against oxidation*. Antioxidant Redox Signal, April, 3 (2):293-311.
 - Raguso CA, Pereira P, Young VR, 1999. *A tracer investigation of obligatory oxidative amino acid losses in healthy young adults*. American Journal of Clinical Nutrition, October, 70 (4)474-483.
 - Kreider R, Miriel V, Berfun E, 1993. *Amino acid supplementation and exercise performance*. Sport Medicine, 16:190-209.
 - Hanan M et al, 2000. *Effect of dietary protein on bone loss in elderly men and women: The Framingham Osteoporosis Study*.
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Immune defense:

- Wang H, Ye X, Ng TB, 2000. *First demonstration of an inhibitory activity of milk proteins against human immunodeficiency virus-1 reverse transcriptase and the effect of succinylation*. Life Sciences, 67:2745-2752.
- Beeh M, Schlaak JF, Buhl R, 2001. *Oral supplementation with whey proteins increases plasma glutathione levels of HIV infected patients*. European Journal of Clinical Investigation, February, 31 (2):171-178.
- Bounous G et al, 1991. *Whey protein as a food supplement in HIV-seropositive individuals*. Clinical Investigative Medicine, 16(3):204-209.
- Kennedy RS, Bounos G, Konok GP, Baruchel S, Lee TDG, 1995. *The use of a whey protein concentrate in the treatment of patients with metastatic carcinoma: A phase I-II Clinical Study*. Anti-cancer Research, 15:2843-2650.
- Droge W, 1997. *Role of cysteine and glutathione in HIV infection and other diseases associated with muscle wasting and immunological dysfunction*. FASEB Journal, Nov;11(13); 1077-89.

Cancer:

- McIntosh GH et al, 1995. *Dietary proteins protect against dimethylhydrazine-induced intestinal cancers in the rats*. Journal of Nutrition, 125:809-816.
- Bounous G, Baptist G, Gold P, 1991. *Whey proteins in cancer prevention*. Cancer Letters 57:91.
- Tsuda H, et al, 2000. *Milk and dairy products in cancer prevention; focus on bovine lactoferrin*. Mutation Research, 462:227-233.

Cardiovascular:

- Miller GD et al, 2000. *Benefits of dairy product consumption on blood pressure in humans: a summary of the biomedical literature*. Journal of the American College of Nutrition, April 19 (2 Suppl):S147-S164.
- Pfeuffer M, Schrezenmeir J, 2000. *Bioactive substances in milk with properties decreasing risk of cardiovascular diseases*. British Journal of Nutrition, Supplement, 84(1):S155-S159.

Infant Nutrition:

- Helne H.E, et al, 1991. *The importance of alpha-lactoglobulin in infant nutrition*. Journal of Nutrition, 121:277-283.
- Jost R et al, 1999. *Aspect of whey protein usage in infant nutrition, a brief review*. International Journal of Food Science and Technology, 34:533-542.

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