



Available in Vanilla, Chai, and Chocolate

- Source of antioxidants and protein for the maintenance of good health
- Digestive enzyme to help the body digest and metabolize carbohydrates, fats and proteins
- Helps prevent niacin, biotin, chromium, pantothenic acid, riboflavin, selenium, thiamine, vitamin B6, vitamin B12 and vitamin C deficiencies
- Supports wound healing, connective tissue formation and red blood cell formation
- Supports the development and maintenance of bones, cartilage, teeth, gums
- Provides support for healthy glucose metabolism and liver function
- Helps maintain healthy skin, immune and thyroid gland function
- Source of vitamin A to help maintain good health, eyesight, skin, membranes and immune function
- Source of vitamin A to support the development and maintenance of bones, teeth and night vision
- Source of amino acids involved in muscle protein synthesis
- Assists in the building of lean muscle mass when combined with regular resistance, training and a healthy balanced diets

## Discussion

**Opti-GHI** contains macro- and micronutrients, as well as a host of ingredients (some patented or proprietary) that support fatty acid metabolism, gastrointestinal health, and healthy eicosanoid and cytokine metabolism. Activated cofactors support mitochondrial energy production needed for biotransformation and detoxification. This formula's ingredients help moderate phase I detoxification, upregulate and support phase II pathways, and provide antioxidant support as well.\*

### Protein Metabolism

**VegaPro** is XYMOGEN's proprietary blend of pea protein isolate and rice protein concentrate, L-glutamine, glycine, and taurine. Generation of glutathione and sulfation cofactors—vital for phase II conjugation—requires an array of amino acids. The combination of pea protein and rice protein, containing a complement of amino acids, achieves an amino acid score of 100%. Glutamine, a conditionally essential and versatile amino acid with two nitrogen moieties, is crucial to nitrogen metabolism and helps maintain healthy liver tissue and function.<sup>[1,2]</sup> The amino acid glycine is needed for bile synthesis, phase II detoxification, and glutathione production. Taurine, a derivative of the sulfur-containing amino acid cysteine, is also important for synthesis of bile salts and helps stabilize cell membranes.\*

### Gastrointestinal Support

**Ginger root**, included to support healthy digestion including the release of bile from the gallbladder, acts at several sites to moderate PGE(2) production and support the normal response to inflammation.<sup>[3]</sup> Fiber (from inulin and flaxseeds) supports production of short-chain fatty acids as well as a healthy intestinal flora. **MeadowPure™**, an organic flaxseed complex, possesses excellent oxidative stability, supports antioxidant activity, and provides lignins, soluble fiber, and omega-3 and omega-6 essential fatty acids.<sup>[4]</sup> **Glutamine** plays a key role in healthy intestinal cell proliferation and gut barrier integrity, immune function, and normal tissue healing.\*<sup>[1,2]</sup>

### Detoxification Support

**Ellagic acid** (from pomegranate extract) prevents over-induction of CYP1A enzymes, works at the gene level to induce synthesis of glutathione-S-transferases and other phase II activities, binds directly to toxins, and protects DNA and hepatocytes.<sup>[5,6]</sup> **Watercress** is a rich source of beta-phenylethyl isothiocyanate (PEITC)—a versatile compound found to inhibit phase I enzymes and induce the phase II enzymes associated with biotransformation and excretion of toxins. Watercress was found to contain even stronger phase II inducers known as 7-methylsulfinylheptyl and 8-methylsulfinyloctyl isothiocyanates as well.<sup>[7,8]</sup> **Green tea catechins** not only support antioxidant activity but also appear to act as modulators of phase I and phase II detoxification.<sup>[9]</sup> **Choline** is present to support lipid metabolism in the liver and can be converted to betaine, a methyl donor.\*<sup>[10]</sup>

The active, bioavailable form of **B vitamins** (pyridoxal-5'-phosphate (B6), 5-methyltetrahydrofolate (folate), methylcobalamin (B12)) and glycine all support amino acid conjugation and are vital for the detoxification of xenobiotics and xenoestrogens. 5-methyltetrahydrofolate (5-MTHF), methylcobalamin, betaine, and **methylsulfonylmethane (MSM)** are present to support methylation and detoxification. 5-MTHF supports healthy folate nutrition, especially in those with variations in folate metabolism. In Opti-GHI, 5-MTHF is provided as Quatrefolic® for enhanced stability, solubility, and bioavailability.\*<sup>[11]</sup>

**Preventium®**, a patented form of potassium hydrogen d-glucarate, supports glucuronidation. Sulfation is supported by **MSM** and **sodium sulfate**. Acetylation is supported by **d-calcium pantothenate**, pyridoxal-5'-phosphate, and magnesium. Several minerals in Opti-GHI are provided as Albion® mineral chelates and TRAACS® mineral amino acid chelates for enhanced gastrointestinal absorption and bioavailability.\*<sup>[12]</sup>

Continued on next page

## Opti-GHI Vanilla

Servings Per Container: About 28  
Medicinal Ingredients (per scoop)

Betaine	125 mg
Choline (choline bitartrate)	50 mg
Quercetin (Quercetin dihydrate)	125 mg
Rutin	100 mg
Niacinamide	15 mg
Biotin	75 mcg
Calcium (DimaCal® dicalcium malate)	100 mg
Green tea extract ( <i>Camellia sinensis</i> , Leaf - 1.024:1 42.0 mg)	41 mg (2.46 mg Caffeine, 30% Epigallocatechin 3-gallate, 60% Catechins 24.6 mg Catechins, 6% Caffeine, 12.3 mg Epigallocatechin 3-gallate)
Chromium (as TRAACS® chromium nicotinate glycinate chelate)	30 mcg
Citrus bioflavonoids	31.3 mg
Lemon ( <i>Citrus limon</i> , Fruit peel)	90 mg
Pantothenic acid (Calcium-D-pantothenate)	17.5 mg
Folate ((Quatrefolic® (6S)-5-Methyltetrahydrofolic acid, glucosamine salt)	100 mcg
Aminogen® Protease (Fungal protease from <i>Aspergillus flavus var. oryzae</i> and <i>Aspergillus niger</i> )	150 mg (7500 FCC HUT)
Iodine (Potassium iodide)	30 mcg
Vitamin C (Sodium ascorbate)	125 mg
L-Glutamine	87.5 mg
Flaxseed ( <i>Linum usitatissimum</i> , seed)	2.8 g
Magnesium (Albion® di-magnesium malate)	70 mg
Manganese (TRAACS® manganese bisglycinate chelate)	1 mg
MSM (Methylsulfonylmethane)	60 mg
Molybdenum (TRAACS® molybdenum glycinate chelate)	17.5 mcg
N-Acetyl-L-cysteine	75 mg
Niacin	5 mg
Pea Protein	12 g
Preventium® Potassium hydrogen D-glucarate	125 mg
Riboflavin (Riboflavin 5'-phosphate sodium)	2.5 mg
Selenium (Albion® selenium glycinate complex)	50 mcg
Thiamine (Thiamine hydrochloride)	7.5 mg
Vitamin B12 (methylcobalamin)	25 mcg
Vitamin B6 (Pyridoxal 5-phosphate)	2.5 mg
Zinc (TRAACS® zinc bisglycinate chelate)	5 mg
Ginger ( <i>Zingiber officinale</i> , Rhizome)	75 mg
beta-Carotene	750 mcg

### Non-Medicinal Ingredients

Evaporated cane juice, sunflower oil, natural flavors, medium-chain triglycerides, potassium citrate monohydrate, taurine, glycine, cellulose gum, xanthan gum, *Punica granatum* fruit extract, rice protein concentrate, BCM-95® curcumin, stevia, sodium sulfate, guar gum, silicon dioxide.

### Recommended Dose

**Adults:** Take two scoops once a day. Mix two scoops with 250-350 mL of water or other beverage immediately before consumption. Take once daily with food and two hours before or after taking other medications. Store in a light-resistant container. Consult a healthcare practitioner for use beyond six weeks.

Consult a healthcare practitioner prior to use if you are pregnant or breastfeeding, if you have diabetes or difficulty swallowing, if you have an iron deficiency, kidney stones or kidney disease, gallstones or a bile duct obstruction, if you have stomach ulcers or excess stomach acid, if you have a liver disorder or liver disease. Consult a healthcare practitioner prior to use if you have a gastrointestinal lesion/ulcer, are taking an anticoagulant, a blood thinner or an anti-inflammatory or if you are having surgery. Consult a healthcare practitioner immediately if you experience chest pain, vomiting, or difficulty swallowing or breathing after taking this product. Consult a healthcare practitioner prior to use if you are experiencing a sudden change in bowel habits that has persisted for more than two weeks, have undiagnosed rectal bleeding or have failed to defecate following the use of a laxative product. Consult a healthcare practitioner prior to use if you have symptoms such as abdominal pain, nausea, vomiting, or fever (as these could be signs of abnormal constrictions of the gastrointestinal tract, disease of the oesophagus and/or the superior opening of the stomach (cardia), potential or existing intestinal blockage or paralysis of the intestine, megacolon, faecal impaction, inflamed bowel or appendicitis). Consult a healthcare practitioner prior to use if you are taking medications which may inhibit peristaltic movement (i.e., opioids, loperamide). If you are taking prescription medication, consult a healthcare practitioner prior to use as citrus bioflavonoids may alter the effectiveness of these medications. If you are taking antibiotics and/or nitroglycerin, do not use this product. Hypersensitivity/allergy has been known to occur; in which case, discontinue use. Some people may experience mild and temporary gastrointestinal bloating, gas, constipation or indigestion.

Stop use and consult a healthcare practitioner if you develop symptoms of liver trouble such as yellowing of the skin/eyes (jaundice), stomach pain, dark urine, sweating, nausea, unusual tiredness and/or loss of appetite. Rare, unpredictable cases of liver injury associated with green tea extract-containing products have been reported.

### Nutritional Information

	Amount per 1 Scoop
Calories	120
Total Fat	3.5 g
Saturated Fat 1 g	
Sodium 280 mg	
Potassium 230 mg	
Total Carbohydrate	8 g
Dietary Fiber 2 g	
Sugars 3 g	
Protein	13 g

### Antioxidant Support and Cytokine Balance

**Bioflavonoids, quercetin, rutin, and curcumin** support antioxidant activity, counter free radicals, and support healthy eicosanoid and cytokine metabolism.<sup>[13,14]</sup> Curcumin has a long history of use for its support of a normal, healthy response to inflammation.<sup>[15]</sup> **N-acetyl-cysteine (NAC)** stimulates glutathione synthesis, enhances glutathione-S-transferase activity, and promotes detoxification.<sup>[16]</sup> **Selenium glycinate** provides support for glutathione metabolism and antioxidant protection.\*

Opti-GHI provides an array of nutrients that supports gastrointestinal health; detoxification and antioxidant mechanisms; and a normal, healthy response to inflammation and cytokine balance. This formula is designed to be used as part of a step-approach cleanse in conjunction with a modified elimination plan.\*

## References

1. Smith RJ, Wilmore DW. Glutamine nutrition and requirements. *JPEN J Parenter Enteral Nutr.* 1990 Jul-Aug;14(4 Suppl):94S-99S. Review. [PMID: 2119461]
2. Lacey JM, Wilmore DW. Is glutamine a conditionally essential amino acid? *Nutr Rev.* 1990 Aug;48(8):297-309. Review. [PMID: 2080048]
3. Lantz RC, Chen GJ, Sarihan M, et al. The effect of extracts from ginger rhizome on inflammatory mediator production. *Phytomedicine.* 2007 Feb;14(2-3):123-28. [PMID: 16709450]
4. Adolphe JL, Whiting SJ, Juurlink BH, Thorpe LU, Alcorn J. Health effects with consumption of the flax lignan secoisolariciresinol diglucoside. *Br J Nutr.* 2010 Apr;103(7):929-38. Review. [PMID: 20003621]
5. Barch DH, Rundhaugen LM, Stoner GD, et al. Structure-function relationships of the dietary anticarcinogen ellagic acid. *Carcinogenesis.* 1996 Feb;17(2):265-9. [PMID: 8625448]
6. Girish C, Koner BC, Jayanthi S, et al. Hepatoprotective activity of picroliv, curcumin and ellagic acid compared to silymarin on paracetamol induced liver toxicity in mice. *Fundam Clin Pharmacol.* 2009 Dec;23(6):735-45. [PMID: 19656205]
7. Rose P, Faulkner K, Williamson G, et al. 7-Methylsulfinylheptyl and 8-methylsulfinyloctyl isothiocyanates from watercress are potent inducers of phase II enzymes. *Carcinogenesis.* 2000 Nov;21(11):1983-8. [PMID: 11062158]
8. Hofmann T, Kuhnert A, Schubert A, et al. Modulation of detoxification enzymes by watercress: in vitro and in vivo investigations in human peripheral blood cells. *Eur J Nutr.* 2009 Dec;48(8):483-91. [PMID: 19636603]
9. Akhlaghi M, Bandy B. Dietary green tea extract increases phase 2 enzyme activities in protecting against myocardial ischemia-reperfusion. *Nutr Res.* 2010 Jan;30(1):32-39. [PMID: 20116658]
10. Linus Pauling Institute. <http://lpi.oregonstate.edu/infocenter/othernuts/choline/>. Accessed May 8, 2012.
11. Quatrefolic. <http://www.quatrefolic.com/>. Accessed May 8, 2012.
12. Albion. <http://www.albionminerals.com/>. Accessed May 8, 2012.
13. Garg R, Gupta S, Maru GB. Dietary curcumin modulates transcriptional regulators of phase I and phase II enzymes in benzo[a]pyrene-treated mice: mechanism of its anti-initiating action. *Carcinogenesis.* 2008 May;29(5):1022-32. [PMID: 18321868]
14. Amália PM, Possa MN, Augusto MC, et al. Quercetin prevents oxidative stress in cirrhotic rats. *Dig Dis Sci.* 2007 Oct;52(10):2616-21. [PMID: 17431769]
15. Jurenka JS. Anti-inflammatory properties of curcumin, a major constituent of *Curcuma longa*: a review of preclinical and clinical research. *Altern Med Rev.* 2009 Jun;14(2):141-53. Review. Erratum in: *Altern Med Rev.* 2009 Sep;14(3):277. [PMID: 19594223]
16. Kelly GS. Clinical applications of N-acetylcysteine. *Altern Med Rev.* 1998 Apr;3(2):114-27. Review. [PMID: 9577247]

Additional references available upon request.



Albion, DimaCal, TRAACS and the Albion Medallion design are registered trademarks of Albion Laboratories, Inc. Malates covered by US patent 6,706,904.



Quatrefolic® is a registered trademark of Gnosis S.p.A. Produced under US patent 7,947,662.

Preventium® is a registered trademark of Applied Food Sciences, LLC. (US patents 4,845,123, 5,364,644, 5,561,160).

AMINOGEN® is a registered trademark of Innophos Nutrition, Inc. AMINOGEN® is protected under US patent 5,387,422. BCM-95® is a registered trademark of DolCas Biotech, Ltd. Protected under US patents 7,883,728; 7,736,679; and 7,879,373.

EXCLUSIVE • PATENTED



7 22537 51103 2