

# Complete Fuel Chocolate



FUNCTIONAL  
NUTRIENTS®

## Clinical Applications

- Supports Protein Metabolism and Healthy Body Composition\*
- Supports Cardiovascular Health\*
- Supports Gastrointestinal Health\*
- Supports Antioxidant Systems\*
- Provides Essential Micronutrients\*

*Complete Fuel Chocolate is a nutrient-rich shake mix ideal for vegans, individuals sensitive or allergic to soy and/or dairy, or those seeking an alternative source of quality protein. Complete Fuel Chocolate features Vegan Protein Blend, an all-natural pea and rice protein blend; Aminogen®, a plant enzyme that enhances protein digestibility and absorption; and Artinia® chitin-glucan, a novel fiber that supports antioxidant systems in the body. This sugar- and stevia- free formula provides an array of micronutrients, including high-potency B12, activated B vitamins, and Albion® TRAACS® chelated minerals (the real amino acid chelate system).\**

All Personalized Medical Solutions Formulas Meet or Exceed cGMP Quality Standards

## Discussion

**Vegan Protein Blend.** Personalized Medical Solutions's proprietary blend of highly digestible pea protein concentrate, pea protein isolate, glycine, taurine, rice protein concentrate, and L-glutamine, is the cornerstone of Complete Fuel Chocolate. Aminogen is added to enhance protein digestion and absorption.<sup>[1]</sup> The combination of pea protein and rice protein achieves an amino acid score of 100% and supports protein metabolism and healthy body composition.\*<sup>[2]</sup>

Protein is required for cell and tissue repair, hormone and enzyme synthesis, and a variety of metabolic functions. It is especially important for maintaining lean body mass during increased physical activity. Protein supplementation has been found to be a determining factor in increasing fat-free mass and exercise-stimulated fat oxidation. Subjects who consumed a significantly higher protein intake (~80 g/d versus ~59 g/d) experienced a significant increase in fat oxidation and fat-free mass with a significant decrease in fat mass and body fat percentage.<sup>[3]</sup> Studies have indicated that increased protein intake enhances satiety<sup>[2,4-6]</sup> and supports diminished food intake during subsequent meals.<sup>[7]</sup> One randomized crossover study suggested that pea protein was superior to milk protein with respect to satiety and intermeal interval.<sup>[8]</sup> Research has also demonstrated that pea protein stimulates release of cholecystokinin and glucagon-like peptide 1, gastrointestinal hormones that modulate appetite sensations.\*<sup>[9]</sup>

While pea-based protein provides a satisfying and versatile source of protein, it also supports cardiovascular health. Animal studies have suggested that it positively affects lipid homeostasis by modulating gene expression; that is, upregulating genes that affect hepatic cholesterol uptake and downregulating genes that affect fatty acid synthesis.\*<sup>[10,11]</sup>

**Artinia® Chitin-Glucan** is incorporated into Complete Fuel Chocolate to support antioxidant activity and cardiovascular health. Artinia is a purified, insoluble, gluten-free fiber ingredient composed of chitin (N-acetyl-D-glucosamine) and beta(1,3)-glucan chains.<sup>[12]</sup> Artinia has been researched for its effects on maintaining oxidative balance and artery health, key components of cardiovascular health. A 12-week animal study indicated that chitin-glucan supports cardiovascular health by maintaining healthy arteries, reducing cardiac superoxide anion and liver malondialdehyde (markers of oxidation), and enhancing superoxide dismutase and glutathione peroxidase activity.\*<sup>[13]</sup>

Human trials have revealed significantly positive results as well. A six-week, multicenter, randomized, double-blind, placebo-controlled study (n = 130) of Artinia revealed that 1.5 g/d significantly supported subjects' LDL cholesterol at levels already within normal range, and 4.5 g/d significantly supported subjects' natural antioxidant systems and oxidative balance of LDL cholesterol.<sup>[14,15]</sup> A 28-day pilot study found Artinia to be safe and well-tolerated at a dose of 4.5 g/d.<sup>[15]</sup> Complete Fuel Chocolate provides 2.25 g of Artinia per serving. Artinia is a healthy alternative to phytosterol supplementation and has not been observed to interfere with absorption of fat-soluble vitamins or antioxidants.\*

**Micronutrient Support** Complete Fuel Chocolate delivers a balanced profile of vitamins, minerals, and antioxidants, nutrients vital to supporting the vast array of metabolic processes in the body.<sup>[16]</sup> B vitamins are present in their bioactive forms, including riboflavin 5'-phosphate, pyridoxal 5'-phosphate, methylcobalamin, and 5-methyltetrahydrofolate as Quatrefolic®.\*<sup>[17]</sup>

**Sugar- and Stevia-Free** This formula is sweetened with monk fruit extract in place of sugar or stevia. Animal and human research suggests that superfluous consumption of added sugars increases adiposity, disrupts lipid regulation, and elevates cardiometabolic risk.\*<sup>[18-22]</sup>

**Glutamine** The conditionally essential amino acid glutamine is important for replenishing amino acid stores, especially after exercise or stress.<sup>[23]</sup> Glutamine also supports intestinal cell proliferation and thereby preserves gut barrier function and intestinal health.\*<sup>[24-26]</sup>

**Inulin** This soluble fiber is fermented by colonic bacteria into short-chain fatty acids that exert a positive effect on lipid metabolism and support healthy colon transit time.\*<sup>[27,28]</sup>

**\*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.**

Complete Fuel Chocolate



# Chocolate

## Supplement Facts

Serving Size: 2 Scoops (about 34 g)  
Servings Per Container: About 14

	Amount Per Serving	%DV
Calories	110	
Total Fat	2.5 g	3%†
Saturated Fat	1.5 g	8%†
Total Carbohydrate	11 g	4%†
Dietary Fiber	8 g	29%
Protein	15 g	
Vitamin A (75% as natural beta-carotene and 25% as retinyl palmitate)	560 mcg	62%
Vitamin C (as sodium ascorbate, potassium ascorbate, zinc ascorbate, and calcium ascorbate)	125 mg	139%
Vitamin E (as d-alpha tocopheryl succinate and mixed tocopherols)	33.5 mg	223%
Thiamin (as thiamine mononitrate)	5 mg	417%
Riboflavin (as riboflavin 5-phosphate sodium)	5 mg	385%
Niacin (as niacinamide and niacin)	16 mg	100%
Vitamin B6 (as pyridoxal 5-phosphate)	5 mg	294%
Folate (as Quatrefolic® (6S)-5-methyltetrahydrofolic acid, glucosamine salt)	100 mcg DFE	25%
Vitamin B12 (as MecobalActive™ methylcobalamin)	125 mcg	5208%
Biotin	250 mcg	833%
Pantothenic Acid (as d-calcium pantothenate)	50 mg	1000%
Choline (as choline dihydrogen citrate)	9 mg	2%
Calcium (from DimaCal® di-calcium malate, and ingredients with naturally occurring calcium)	45 mg	4%
Iron (naturally occurring)	4 mg	22%
Iodine (as potassium iodide)	25 mcg	17%
Magnesium (as Albion® di-magnesium malate)	25 mg	6%
Zinc (as TRAACS® zinc bisglycinate chelate)	3.25 mg	30%
Selenium (as Albion® selenium glycinate complex)	25 mcg	45%
Manganese (as TRAACS® manganese bisglycinate chelate)	0.125 mg	5%
Chromium (as TRAACS® chromium nicotinate glycinate chelate)	125 mcg	357%
Molybdenum (as TRAACS® molybdenum glycinate chelate)	12.5 mcg	28%
Sodium (naturally occurring)	290 mg	13%
Potassium (from ingredients with naturally occurring potassium and Albion® potassium glycinate complex)	400 mg	9%
Artinia® (chitin-glucan from <i>Aspergillus niger</i> )	2.25 g	**
Aminogen® (proprietary enzyme blend from <i>Aspergillus niger</i> and <i>Aspergillus oryzae</i> )	300 mg	**
Inositol	9 mg	**
PABA (para-aminobenzoic acid)	3.25 mg	**
Vanadium (as TRAACS® vanadium nicotinate glycinate chelate)	187.5 mcg	**

† Percent Daily Values (DV) are based on a 2,000 calorie diet.  
\*\* Daily Value (DV) not established.

**Other Ingredients:** Vegan Protein Blend (Personalized Medical Solutions' proprietary blend of pea protein concentrate, pea protein isolate, glycine, taurine, rice protein concentrate, and L-glutamine), inulin (from chicory), natural flavors (no MSG), cocoa powder, medium-chain triglyceride oil, tripotassium citrate, sunflower oil, cellulose gum, xanthan gum, monk fruit extract, and guar gum.

## Directions

Mix two scoops (34 g) in 6-8 oz of cold water and consume. Adjust amount of water according to thickness desired. May be used as a snack or meal supplement, or taken as directed by your healthcare practitioner.

Consult your healthcare practitioner prior to use. Individuals taking medication should discuss potential interactions with their healthcare practitioner. Do not use if tamper seal is damaged.

## Does Not Contain

Wheat, gluten, yeast, soy protein, animal or dairy products, fish, shellfish, peanuts, tree nuts, egg, artificial colors, artificial sweeteners, or artificial preservatives



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

MecobalActive™ is a trademark of Ferrer Health Tech. The active form of B<sub>12</sub>.



AMINOGEN® is a registered trademark of Innophos Nutrition, Inc. AMINOGEN® is protected under US patent 5,387,422.

ARTINIA® is a registered trademark of Novus Nutrition Brands, LLC. Protected by US patent 7,556,946.



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

### Typical Amino Acid Profile Per Serving:

Alanine	675 mg	Methionine	166 mg
Arginine	1,352 mg	Phenylalanine	856 mg
Aspartic Acid	1,824 mg	Proline	682 mg
Cysteine	148 mg	Serine	840 mg
Glutamic Acid	2,661 mg	Taurine	500 mg
Glycine	644 mg	Threonine	586 mg
Histidine	390 mg	Tryptophan	154 mg
Isoleucine	726 mg	Tyrosine	601 mg
Leucine	1,312 mg	Valine	787 mg
Lysine	1,143 mg		

## Warning

Very low calorie protein diets (below 400 Calories per day) may cause serious illness or death. Do Not Use for Weight Reduction in Such Diets Without Medical Supervision. Not for use by infants, children, or pregnant or nursing women.

## References

- Oben J, Kothari SC, Anderson ML. An open label study to determine the effects of an oral proteolytic enzyme system on whey protein concentrate metabolism in healthy males. *J Int Soc Sports Nutr.* 2008 Jul 24;5:10. [PMID: 18652668]
- Westertep-Plantenga MS, Lemmens SG, Westertep KR. Dietary protein - its role in satiety, energetics, weight loss and health. *Br J Nutr.* 2012 Aug;108 Suppl 2:S105-12. Review. [PMID: 23107521]
- Soenen S, Plasqui G, Smeets AJ, et al. Protein intake induced an increase in exercise stimulated fat oxidation during stable body weight. *Physiol Behav.* 2010 Dec 2;101(5):770-4. [PMID: 20826169]
- Halton TL, Hu FB. The effects of high protein diets on thermogenesis, satiety and weight loss: a critical review. *J Am Coll Nutr.* 2004 Oct;23(5):373-85. Review. [PMID: 15466943]
- Anderson GH, Moore SE. Dietary proteins in the regulation of food intake and body weight in humans. *J Nutr.* 2004 Apr;134(4):974S-9S. Review. [PMID: 15051857]
- Veldhorst M, Smeets A, Soenen S, et al. Protein-induced satiety: effects and mechanisms of different proteins. *Physiol Behav.* 2008 May 23;94(2):300-7. Review. [PMID: 18282589]
- Johnstone AM, Stubbs RJ, Harbron CG. Effect of overfeeding macronutrients on day-to-day food intake in man. *Eur J Clin Nutr.* 1996 Jul;50(7):418-30. [PMID: 8862477]
- Diepvens K, Häbärer D, Westertep-Plantenga M. Different proteins and biopeptides differently affect satiety and anorexigenic/orxigenic hormones in healthy humans. *Int J Obes (Lond).* 2008 Mar;32(3):510-8. [PMID: 18345020]
- Geraedts MC, Troost FJ, Tinnemans R, et al. Release of satiety hormones in response to specific dietary proteins is different between human and murine small intestinal mucosa. *Ann Nutr Metab.* 2010;56(4):308-13. [PMID: 20530962]
- Rigamonti E, Parolini C, Marchesi M, et al. Hypolipidemic effect of dietary pea proteins: impact on genes regulating hepatic lipid metabolism. *Mol Nutr Food Res.* 2010 May;54 Suppl 1:S24-30. [PMID: 20077421]
- Parolini C, Manzini S, Busnelli M, et al. Effect of the combinations between pea proteins and soluble fibres on cholesterolaemia and cholesterol metabolism in rats. *Br J Nutr.* 2013 Oct;110(8):1394-401. [PMID: 23458494]
- Stratum Nutrition. Artinia™ technical data. <http://ckingredients.com/pdf/Products-Artinia.pdf>. Accessed January 24, 2017.
- Berecochea-Lopez A, Decordé K, Ventura E, et al. Fungal chitin-glucan from *Aspergillus niger* efficiently reduces aortic fatty streak accumulation in the high-fat fed hamster, an animal model of nutritionally induced atherosclerosis. *J Agric Food Chem.* 2009 Feb 11;57(3):1093-8. [PMID: 19154104]
- Bays HE, Evans JL, Maki KC, et al. Chitin-glucan fiber effects on oxidized low-density lipoprotein: a randomized controlled trial. *Eur J Clin Nutr.* 2013 Jan;67(1):2-7. [PMID: 22948945]
- Deschamps A, Nollevaux G, Gautier S, et al. Managing oxidative stress with a vegetal ingredient, chitin-glucan. *Agrofood.* 2009;20(4):12-14. [on file]
- Ames BN. A role for supplements in optimizing health: the metabolic tune-up. *Arch Biochem Biophys.* 2004 Mar 1;423(1):227-34. [PMID: 14989256]
- Quatrefolic. <http://www.quatrefolic.com/>. Accessed January 24, 2017.
- Stanhope KL, Schwarz JM, Keim NL, et al. Consuming fructose-sweetened, not glucose-sweetened, beverages increases visceral adiposity and lipids and decreases insulin sensitivity in overweight/obese humans. *J Clin Invest.* 2009 May;119(5):1322-34. [PMID: 19381015]
- Pollock NK, Bundy V, Kanto W, et al. Greater fructose consumption is associated with cardiometabolic risk markers and visceral adiposity in adolescents. *J Nutr.* 2012 Feb;142(2):251-57. [PMID: 22190023]
- Stanhope KL, Havel PJ. Fructose consumption: recent results and their potential implications. *Ann N Y Acad Sci.* 2010 Mar;1190:15-24. Review. [PMID: 20388133]
- Stanhope KL, Havel PJ. Fructose consumption: considerations for future research on its effects on adipose distribution, lipid metabolism, and insulin sensitivity in humans. *J Nutr.* 2009 Jun;139(6):1236S-1241S. [PMID: 19403712]
- Dinicolantonio JJ, Berger A. Added sugars drive nutrient and energy deficit in obesity: a new paradigm. *Open Heart.* 2016 Aug 2;3(2):e000469. [PMID: 27547437]
- Castell L. Glutamine supplementation in vitro and in vivo, in exercise and in immunodepression. *Sports Med.* 2003;33(5):323-45. Review. [PMID: 12696982]
- Chwals WJ. Regulation of the cellular and physiological effects of glutamine. *Mini Rev Med Chem.* 2004 Oct;4(8):833-8. Review. [PMID: 15544544]
- McAnena OJ, Moore FA, Moore EE, et al. Selective uptake of glutamine in the gastrointestinal tract: confirmation in a human study. *Br J Surg.* 1991 Apr;78(4):480-82. [PMID: 1903318]
- Souba WW, Klimberg VS, Plumley DA, et al. The role of glutamine in maintaining a healthy gut and supporting the metabolic response to injury and infection. *J Surg Res.* 1990 Apr;48(4):383-91. Review. [PMID: 2187115]
- Roberfroid M. Dietary fiber, inulin, and oligofructose: a review comparing their physiological effects. *Crit Rev Food Sci Nutr.* 1993;33(2):103-48. Review. [PMID: 8257475]
- Flamm G, Glimsmann W, Kritchevsky D, et al. Inulin and oligofructose as dietary fiber: a review of the evidence. *Crit Rev Food Sci Nutr.* 2001 Jul;41(5):353-62. Review. [PMID: 11497328]

**\*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.**

Personalized Medical Solutions  
2225 SE 64th Place Ste 200 Issaquah, WA 98027  
Report adverse reactions to 425-391-3376

DRS-315  
REV. 01/12/18