

# **TOTAL GREEN** **(PROTEIN POWDER)**

**Ingredients:** Whey Protein 5,460 mg (18% Glycomacropeptide); Certified Organic sprouts: Asparagus sprouts 63 mg; Broccoli Sprouts 63 mg; Cauliflower sprouts 63 mg; Wheat Grass sprouts 63 mg; Spirulina 126 mg, Chlorella (broken cell) 21 mg, Kelp 21 mg, Medium chain triglycerides, Chia seed 21 mg, Apple Pectin 168 mg, Beta Sitosterol 42 mg; Rosemary 42 mg, Parsley 84 mg, Carrots( freeze dried powder)63 mg; Papaya 42 mg; Cloves 8.4 mg, Lactobacillus Acidophilus (enteric coated) 37,000 units, Lactobacillus Bulgaricus (enteric coated) 37,000 units, Protease (vegetable) 42 mg, Xylitol 42 mg, Luo Han Guo 10 mg, Lecithin 126 mg, Rice Bran 840 mg, Rose Hips 252 mg, Calcium (as Citrate) 16.8 mg, Magnesium ( as Citrate) 16.8 mg, Yellow Dock 63 mg, Milk Thistle 63 mg.

**Calories:** 37; **Protein:** 5.86 g; **Fat:** 0.72 g; **Carb.:** 0.228 g

**Supportive Function:** For general health, supports all biochemical reactions in the body, provides vitamins, minerals, accessory nutrients, antioxidants, phytochemicals, etc. for a healthy profile and optimal function of all processes.

**When is Total Green Protein helpful?** Any condition that can be improved with comprehensive nutritional support. Supports energy, protein balance, detox, inflammation, weight, cholesterol levels, a strong immune system, intestinal homeostasis/bowel function, cell repair, and overall good health!

## **Clinical Applications/Research:**

**Whey Protein** is an excellent source of protein to provide all the precursors for enzymes, cell receptors, hormones, and other biologically active compounds. Whey protein is believed to increase glycogen content in liver and skeletal muscle, which has implications for energy production and fitness capacity (Morifuji M. et al. 2005). Whey protein has even demonstrated antibacterial and antiviral effects (Sitohy M. et al. 2005). Whey contains one of the most bioavailable sources of calcium, and its beneficial effect on bone metabolism has been shown in adult humans, and is also believed to affect bone metabolism in earlier life (Kelly O. et al. 2003).

**Whey protein also has high anti-inflammatory potential** and has been utilized to help reduce the inflammation in critically ill trauma patients receiving enteral nutritional support; C-reactive protein concentrations (marker of inflammation) and total inflammatory index dramatically fell in one study (Vehe KL et al. 1991).

The whey protein source used for Total Green Protein has an 18% glycomacropeptide content (GMP). The biological activity of GMP “has received much attention in recent years. Research has focused on the ability of GMP to **bind cholera and Escherichia coli enterotoxins, inhibit bacterial and viral adhesion, promote bifidobacterial growth and modulate immune system responses**” (Brody E.P. 2000). In describing GMP, the Journal of Nutrition reports that the “magnitude of **the anti-inflammatory effect was comparable to that of sulfasalazine**, an established drug used

in the treatment of Inflammatory Bowel disease”, and that GMP “acts as an **anti-infectious factor, promoting the growth of bifidobacteria** while inhibiting the proliferation of pathogens. In addition, **GMP may combat infection by binding to lectins, viruses, and mycoplasma**” (J Nutr 2005).

**Certified Organic Sprouts:** All sprouts in Total Green Protein are certified organic and free of toxic residues. Sprouts are one of the richest source of food enzymes, vitamins, mineral and phytochemicals available to us. As powerful and as protective as the cruciferous vegetables are, the sprouts are even more potent - researchers at Johns Hopkins University reported that sprouts from cruciferous vegetables can exhibit 10-100 times higher levels of the protective ingredients than the corresponding mature plants (Fahey J. et al. 1997). **“Small quantities of cruciferous sprouts may protect against the risk of cancer as effectively as much larger quantities of mature vegetables of the same variety”....** (Fahey 1997). The healthful phytochemicals in sprouts include carotenoids, flavonoids, chlorophyll, indoles (indole-3-carbinol; DIM), glucosinolates, dithiolthiones, isothiocyanates, isoflavones, glycosides, phenols, glucoraphanin and sulphoraphane).

**Broccoli Sprouts** contain many of the beneficial phytochemicals, but are particularly high in sulforaphane, one of the key phytochemicals that induces key protective enzymes in tissues, especially the liver, that **“enhance an already present capacity to detoxify carcinogens”** (Fahey, J. 2003). Researcher Jeff Fahey also points out that the broccoli seed, and therefore the sprout, is the most concentrated source of the phytochemical sulforaphane, because the compound becomes diluted as the plant matures. Research has found the sulforaphane in broccoli sprouts to be a potent anti-bacterial agent effective in inhibiting the highly resistant stomach bug, *Helicobacter pylori*, and is also effective in **“blocking gastric (stomach) tumor formation”** (Fahey JW, et al. 2002)

**Cauliflower** is a cruciferous vegetable high on the list of recommended foods compiled by the American Cancer society that contain the protective sulforaphane. **Cauliflower sprouts** contain high amounts of sulforaphane, unlike the mature plant that is relatively low in sulforaphane. Total Green Protein contains organic cauliflower sprouts, even though, as researcher Jeff Fahey comments: “Cauliflower sprouts are exceedingly expensive to produce (Jeff W. Fahey, Ibid, p. 2). The indoles in cauliflower sprouts are believed to be responsible for strengthening the immune system, enhancing detoxification, and protecting the GI tract.

**Wheat Grass sprouts** are high in many of the beneficial nutrients characteristic of sprouts. Dr. Ann Wigmore, Hippocrates Health Institute, Boston, compares 1 pound of wheatgrass (high in chlorophyll) to the nutritional value of 25 pounds of the best vegetables.

**Spirulina, Chlorella and Kelp** are beneficial, healthful green algae nutrients. Spirulina is a particularly rich source of proteins, vitamins, amino acids, minerals, and other nutrients. Spirulina has been proven to be, “effective to treat certain allergies, anemia, cancer, hepatotoxicity, viral and cardiovascular diseases, hyperglycemia, hyperlipidemia, immunodeficiency, and inflammatory processes, among others” (Chamorro G. et al. 2002 Sep;52(3):232-40). These activities are attributed to some of the components in spirulina, including a recently isolated complex called Ca-Spirulan. Spirulina and **chlorella** have both been found to have antioxidant and antiproliferative qualities in rigorous scientific testing (Wu, L.C. et al. 2005). **Kelp** helps to regulate function of the thyroid and pituitary glands, and assists many other organs, such as pancreas, adrenals, and male and female

organs. It also has antibiotic properties and is reported to help in weight regulation (Heinerman, John. 1988).

**Medium chain triglycerides (MCT)** are known to have a favorable effect on lipid levels, insulin, and body weight, and gut inflammation. Subjects on a MCT diet demonstrated significant decreases in body fat weight (Nosaka N. 2003). MCT are believed to decrease fat pads, down regulate key fat genes, improve insulin sensitivity/glucose tolerance, reduce enzymes affecting cholesterol and lipid levels (Han J. et al. 2003).

**Apple Pectin** contains soluble **fiber that** releases hormones signaling satiety (fullness), which can reduce hunger. **Apple pectin** slows absorption of glucose/food from the intestines, binds toxins, supports healthy cholesterol levels and normalizes bowel function. Pectin protects the stomach lining by strengthening the mucus layer and significantly inhibits ulcer formation (Nippon Shokakibyo Gakkai Zasshi 1991). The high fiber content supports normal appetite and weight balance.

**Luo Han Guo**, or Lo Han Kuo (from the Momordica grosvenori fruit) is a novel, natural sweetener that has many beneficial, health-promoting properties. The sweet elements, called triterpene glycosides, actually **suppress the rise in blood glucose** after a meal!

(Suzuki YA t. al.. 2005). Researchers have found the natural sweetener to exhibit significant anti-tumor activity by decreasing both initiation and promotion (Ukiya M. et al. 2002).

Additionally, it prevents the oxidation of LDL (bad cholesterol) and may reduce the risk of heart disease by reducing the atherogenicity of the LDL (Takeo E. et al. 2002). Researchers have determined that it possesses many advantages, such as having high sweetness capability with low adherence (good news for the teeth!) (Mu, J. 1998; Lee, C. 1975).

**Parsley & Carrots (freeze dried powder):** These healthful plants are both high in phytochemicals and enzymes. **Parsley** is an excellent cleanser and assists in digestion. It is well known for being a tonic for the blood vessels and a good blood purifier. **Carrot** fiber increases and softens stool bulk, improves regularity, and helps keep the colon healthy. Carrot consumption is also connected with lower cholesterol levels. High beta-carotene foods, especially carrots, help promote the health of many organ systems (Colditz GA et al, 1987).

**Protease** is a type of digestive enzyme that helps to break down protein so that we can extract an optimal amount from our food. Protease enzymes also optimize digestive processes and reduce allergic reactions (antibodies do not form against individual amino acids) and other problems of incomplete digestion.

**Milk Thistle** and **Yellow Dock** are detoxifying and tonifying herbs. Milk thistle contains silymarin and silybin, powerful antioxidants and cell protectors, especially in the liver (Shalan MG et al. 2005) Silymarin increases glutathione levels (a major detoxifying and conjugating nutrient). **Yellow dock** cleanses the skin and the blood, two of the major detox routes in the body. Yellow dock is antifungal, and has also exhibited antioxidant capabilities (Kim, JC et al 2004; Yildirim A et al 2001.)

**Lactobacillus acidophilus** and **Lactobacillus bulgaricus (enteric-coated)** are probiotics that are helpful in maintaining a healthy balance of good gut flora in the intestines, supporting the immune system. Probiotic administration during remission of inflammatory bowel disease reduces the severity of recurrent colitis by **inducing an immunoregulatory response** (DiGiacinto C. et al 2005).

**Chia seed**, high in omega 3's, has many antioxidant and health benefits (Yen WJ et al. 2005). On diets with chia seed included, **weight reductions up to 6.2% have been recorded** (Averza R. et al 2002).

**Cloves** possess many medicinal properties, including antibacterial and antimicrobial activity (Bagamboula CF et al. 2001; Lai PK & Roy J.) Cloves also have “antioxidative, antimutagenic and anticarcinogenic properties” (Sengupta A. et al. 2004)

**Papaya** is rich in phytochemicals, antioxidants, and contains papain, a helpful digestive enzyme. Papaya and rose hips, also rich in phytochemicals, are two of the few plant substances containing **high amounts of the potent antioxidant lycopene** (Mourvaki E, et al. 2005).

**Rice bran** is high in fiber, has antioxidant properties, and lowers post-prandial glucose concentrations, making it an excellent candidate for **cholesterol and weight support** (Seki T et al. 2005). **Gamma oryzanol** is derived from rice bran.

**Xylitol** is a natural sugar alcohol; we produce up to 15 grams of xylitol from food sources; some of the best sources are fruits and berries. Xylitol can also stimulate saliva, the natural tooth protector. A number of studies have demonstrated that xylitol is antibacterial and anticariogenic (fights cavities) (Sahni PS et al. 2002)

**Anti-inflammatory, natural cox-2 inhibitors:** Cox 2 is the enzyme that causes inflammatory substances to be produced in the body and is also the enzyme targeted by the cox-2 inhibitor drugs (some of these drugs were pulled from the market). The following nutrients all inhibit cox-2 naturally:

**Rosemary** reduces pathogenic substances such as bacteria, raises detoxification enzymes in the liver, and decreases inflammation and liver cell injury (Ahn J. et al. 2004; Sotelo-Felix JJ, et al. 2002). Carnosol, rosmanol, and epirosmanol, are all components of the rosemary herb and all demonstrate high antioxidant activity (Zeng HH, et al. 2001). Carnosol is a potent **inhibitor of cox 2** (Subbaramaiah K. et al. 2002).

**Beta Sitosterol** is a plant sterol possessing “anti-inflammatory, antipyretic (fever-reducing), antineoplastic, and immune-modulating properties, showing promise in normalizing T-cell function, dampening overactive antibody responses (uncontrolled autoimmune response), and normalizing DHEA:cortisol ratios (abnormal ratios can lead to disease) (Bouic PJ et al. 2001). Beta-sitosterol also decreases the inflammatory PGE2 prostaglandin, with the mechanism believed to be **alteration of the cox-2 enzyme** (Awad AB et al. 2004). It is one of the ingredients in **grape skin extract** that gives it its anti-inflammatory properties (Zhang Y. et al. 2004).

**Testimonials/Nutrient Tidbits:** I LOVE the green drink!!! You have created the protein shake I've been waiting for. Here's my favorite so far: Celestial Seasoning Decaf Teahouse Chai (made the night before) for the liquid part. I add probiotics & a banana in with the green stuff. Mmmmm.... :- ) (Halimah Chambers).

**Suggested Dosage:** 1 Tbsp (or more if desired) mixed in water, juice, rice milk, etc. Can be blended with fruit and milk in the blender. Also good sprinkled on salad or blended with yogurt.

**Size:** 16 oz.

**Vegetarian:** No

**Contraindications:** Total Green is high in vitamin K, so caution is indicated with blood-thinning drugs. Should not be used by whey-sensitive people. The components of whey include lactoferrin, beta-lactoglobulin, alpha-lactalbumin, glycomacropeptide, bovine serum albumin and immunoglobulins. Those sensitive to dairy may be sensitive to the whey portion, however, that does not mean that all of those sensitive to dairy will necessarily be sensitive to the whey portion.