PROTOCOL FOR LIFE BALANCE®

Dietary Supplement Information
for Physicians with Naturokinetics®
PRODUCT CODE: P2628
CATEGORY: DETOXIFICATION SUPPORT*

Chlorella 400 mg

TECHNICAL SUMMARY

Chlorella, a single-celled alga, is a storehouse of nutrients, including enzymes, amino acids, vitamins, minerals, RNA/DNA, phytonutrients, and chlorophyll. The chlorella used in this product has been milled to break its cell walls for optimized digestion and absorption.

Structure Formula:

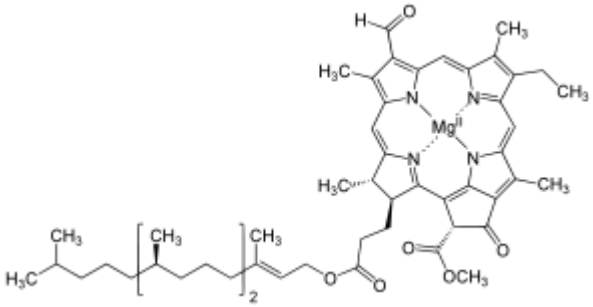

Figure 1: Chemical structure of chlorophyll, one of the active compound found in chlorella.

Chemical Formula: Chlorophyll: $C_{55}H_{72}MgN_4O_5$

Allergen and Additive Disclosure: Not manufactured with yeast, wheat, gluten, soy, milk, egg, fish, shellfish, or tree nut ingredients. Produced in a GMP facility that processes other ingredients containing these allergens.

Delivery Form: Vegetable Capsules

ROLE AS NUTRIENT/FUNCTION

Chlorella is a fresh-water unicellular green alga that has naturally occurring essential amino acids, minerals, vitamins, dietary fiber, carotenoids, and a wide range of bioactive substances. Chlorophyll is its most well known bioactive compound, which is mainly responsible for its greenish hue. Due to its abundance in a wide range of phytonutrients, chlorella is ideal for filling in nutritional gaps commonly found in a typical North American diet.

NATUROKINETICS®

Liberation: Disintegration of the vegetable capsule is tested in water using a USP testing method with disintegration between zero and 60 minutes.

Absorption: Very little data exists regarding the absorption of intact chlorophyll. Pre-clinical evidence suggests that chlorophyll is extensively metabolized in the GI tract. However, some metallochlorophyll derivatives are able to pass through the gastric environment and reach the small intestines intact. Overall, experimental data suggest that the systemic absorption of chlorophyll and its metabolites is limited. Anecdotally, in a 4-month, randomized, double-blind clinical trial, with 90 participants receiving 100 mg chlorophyllin, a blend of water-soluble copper chelates of chlorophyll derivatives, three times daily, the authors observed that serum samples were increasingly green in color over the course of the study. This observation prompted them to research the origin of the green color, and they identified two chlorophyll derivatives in green colored sera, disodium copper chlorin e_4 ($CuCle_4$) and $CuCle_4$ ethyl ester. This study confirms that some chlorophyll derivatives are bioavailable in humans.[1]

Supplement Facts

Serving Size 3 Veg Capsules
Servings Per Container 33

	Amount Per Serving	% Daily Value
Calories	5	
Protein	< 1 g	1%*
Organic Chlorella (Broken Cell Wall) (*Chlorella spp.*) (Whole Plant)	1.2 g (1,200 mg)	†

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

Other ingredient: Cellulose (capsule).

- **Chlorophyll & Other Phytonutrients**
- **Broken Cell Wall**

SUGGESTED USAGE: Take 3 capsules 3 times daily.

Distribution: Results from preclinical investigations suggest that after ingestion, chlorophyll metabolites can be found in the liver, lymph nodes, spleen, heart, skin, kidneys, and lungs.

Metabolism: Chlorophyll is a pH-sensitive molecule that undergoes metabolic changes in the stomach before reaching the intestines. *In vitro* models have shown that the primary metabolites of chlorophyll are pheophytins and pheophytin epimers.

Elimination: Chlorophyll and its derivatives are mainly eliminated in feces.[2]

CLINICAL VALIDATION

- **Immune Support.*** In a randomized, double-blinded, placebo-controlled trial with 51 healthy adult volunteers with an average age 34 years, supplementation with 5 g/d chlorella in tablet form for 8 weeks resulted in statistically significant increase in serum concentrations of interferon-γ, interleukin-1β, and the percentage of activated NK cells ($p < 0.05$), as compared to placebo.*
- **Free Radical Scavenging Support.*** In a randomized, double-blind, placebo-controlled trial with 12 volunteers with an average age 58 years, 8 g/d of chlorella supplementation for 2 months resulted in statistically significant reduction of phospholipid hydroperoxide concentration in the cellular membrane of red blood cell, as compared to placebo ($p < 0.05$).*

SAFETY INFORMATION

Tolerability: Generally well tolerated when used as directed. Occasional gastrointestinal discomfort and photosensitivity may occur.

Contraindications: Not for use in pregnant/nursing women because safety has not been determined.

INTERACTIONS

Drug Interactions: Vitamin K is naturally occurring in chlorella. Theoretically, taking chlorella might decrease the anticoagulant activity of warfarin.

Supplement Interactions: None known.

Interaction with Lab Tests: None known.

STORAGE

Store in a cool, dry place in original sealed container.