PROTOCOL FOR LIFE BALANCE®

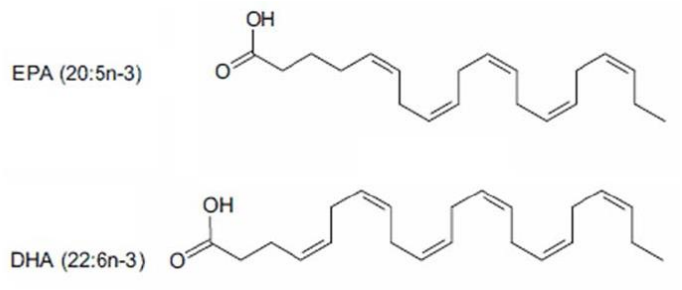
Dietary Supplement Information
for Physicians with Naturokinetics®
PRODUCT CODE: P1612
CATEGORY: FATTY ACIDS

DHA-500

TECHNICAL SUMMARY

DHA (docosahexaenoic acid) is recognized as a physiologically essential nutrient in the brain where it is required in high concentrations for facilitating optimal mental performance (neuronal functioning) and in the retina (of the eye), where it is critical for visual acuity.* DHA exerts its most crucial functions at the level of the cell membrane, where it is known to significantly affect many of its basic properties including fluidity, permeability, and interactions with key signaling and regulatory molecules.* Those who experience gastrointestinal discomfort from other fish oils should find this enteric-coated, odor-controlled softgel easier to tolerate.

Structure Formula:



Chemical Name: EPA (*cis*-5,8,11,14,17-Eicosapentaenoic acid); DHA (*cis*-4,7,10,13,16,19-Docosahexaenoic acid)

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

Delivery Form: Enteric Coated, Softgel Capsule (bovine gelatin, glycerin, water)

ROLE AS NUTRIENT/FUNCTION

EPA and DHA omega-3 fatty acids are normal structural components of cellular membranes.* They affect the biophysical properties of the membrane (e.g. fluidity, thickness, and deformability).* DHA, as the most unsaturated fatty acid in membranes, is highly flexible within the membrane and is particularly effective at accommodating transitional changes associated with transmembrane protein activation. Additionally, EPA and DHA act as substrates for the production of various compounds involved in immune function such as eicosanoids and serve as ligands for nuclear receptors influencing gene regulation.*

NATUROKINETICS®

Liberation: Disintegration of the enteric-coated capsule is tested with two USP testing methods set to simulate two different GI environments. Capsules are exposed to a low-pH media simulating the gastric environment, in these conditions disintegration occurs after 60 minutes, confirming the acid-resistance of these enteric-coated softgel capsules. Capsules are also exposed to a more neutral environment, simulating the intestinal environment. In these conditions disintegration occurs within 60 minutes, confirming that the capsule will dissolve while in the intestine.

Absorption: DHA and EPA are absorbed in the small intestine like other long-chain fatty acids. While in the digestive tract, they are mixed with bile salts and lecithin to form micelles, which are absorbed through the intestine wall. Fatty acids are then converted to triglycerides (TG). These TG are combined with apolipoproteins to form chylomicrons, which are transferred into the lymphatic system and then to the bloodstream. Clinical studies using omega-3 fish oil dietary supplements show that EPA/DHA blood levels increase proportionally along with the increase of daily ingested dose. (figure 1)

Supplement Facts

Serving Size 1 Softgel

	Amount Per Serving	% Daily Value
Calories	10	
Total Fat	1 g	1%**
Polyunsaturated Fat	1 g	†
Fish Oil Concentrate	1 g (1,000 mg)	†
Omega-3 Fatty Acids:		
Docosahexaenoic Acid (DHA)	500 mg	†
Eicosapentaenoic Acid (EPA)	250 mg	†

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

Other ingredients: Softgel Capsule [bovine gelatin (BSE-free), glycerin, enteric coating (pharmaceutical glaze, ethyl alcohol, ammonium hydroxide, glycerin, sunflower lecithin, medium-chain triglycerides), water] and d-alpha Tocopherol (from sunflower).

Contains fish (anchovies, sardines, tuna).

- **Supports Cognitive Function***
- **Molecularly Distilled & Enteric Coated**

SUGGESTED USAGE: Take 1 softgel 1 to 2 times daily with food, or as directed by your healthcare practitioner

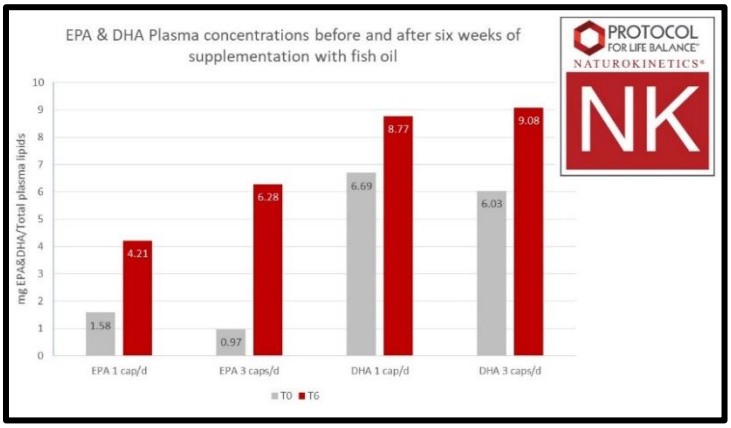


Figure 1: Plasma concentrations of EPA and DHA before (T0) and after (T6) 6 weeks of administration of Fish Oil Capsules to healthy volunteers (n=8). 1 cap group received 150 mg of EPA and 106 mg of DHA. 3 caps group received 450 mg of EPA. P<0.05 for EPA T6 vs. T0.

*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.

Distribution: In the bloodstream, TG transported in chylomicrons are hydrolyzed to free fatty acids and glycerol by lipoprotein lipase and reach peripheral tissues through capillaries. DHA is the most abundant omega-3 FA in cell membranes and is present in all organs. It is most abundant in the retina, cerebral cortex, red blood cells, spleen, liver, muscle tissue, and heart.

Very small quantities of EPA are found in tissues, mainly skeletal muscle and liver. DHA generally exceeds EPA 5- to 30-fold in most organs, except in the brain and retina where it exceeds EPA by several hundred-fold. After supplementation with fish oil, DHA and EPA levels increase in muscle tissue, including the heart and the adipose tissue. Animal studies confirm that after supplementation with omega-3 FAs brain tissue, heart, skeletal muscle, red blood cells, bone marrow, retina, and liver content of EPA/DHA are increased.

Metabolism: Up to 12% DHA is recycled to EPA and docosapentaenoic acid (DPA). EPA/DHA are also substrates for cyclooxygenases and lipoxygenases, and therefore affect the balance of the production of eicosanoids and other autocoids, such as resolvins.* These fatty acids are also ligands for nuclear receptors and can therefore influence gene expression regulation.*

Elimination: DHA has slower plasma clearance than does EPA. After discontinuation of supplementation, EPA level returns to baseline after 4 weeks; while DHA concentrations remain elevated for up to 24 weeks or longer, depending on metabolic requirements.

CLINICAL VALIDATION

- **Cognitive support.*** In a randomized, double-blind, placebo-controlled, clinical study conducted in 485 healthy subjects, aged ≥ 55 with Mini-Mental State Examination >26 and a Logical Memory (Wechsler Memory Scale III) baseline score ≥1 standard deviation below younger adults, were randomly assigned to 900 mg/d of DHA orally or matching placebo for 24 weeks. DHA group had significantly fewer Paired Associate Learning (PAL) errors ($p = 0.03$), improved PAL scores ($p<0.02$) and significantly improved immediate and delayed Verbal Recognition Memory scores ($p <0.02$) as compared with placebo.* Thus, twenty-four week supplementation with 900 mg/d DHA improved learning and memory function in the population with age-related cognitive impairment.*
- **Cardiovascular support.*** Large-scale epidemiological studies as well as prospective secondary prevention studies suggest that EPA/DHA consumption (either as fatty fish or supplements) supports cardiovascular health.*

SAFETY INFORMATION

Tolerability: Marine-source omega-3 fatty acids are generally recognized as safe (GRAS) when consumed up to 3 g/d. Occasional adverse effects may include gastrointestinal complaints such as flatulence, bloating, and diarrhea.

Contraindications: Fish oil should not be used before or immediately after surgical procedures. Discontinue 2 weeks prior to a scheduled surgical procedure.

INTERACTIONS

Drug Interactions: Fish oil should be used cautiously when taking anti-platelet or anticoagulant medications such as Plavix®, Coumadin®, or aspirin. Taking orlistat with fish oil may reduce the absorption of the supplement. Take orlistat and fish oil 2 hours apart to avoid interaction.

Supplement Interactions: Supplements such as *Ginkgo biloba*, turmeric, garlic, and willow bark may increase the risk of bleeding when taken with fish oil.

Interaction with Lab Tests: Healthy individuals may exhibit higher than normal ratios on PT/INR lab tests when taking fish oil.

STORAGE

Store in a cool, dry place.