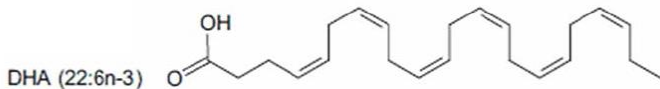


## DHA-1000

### 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.\*

#### Structure Formula:



**Chemical Name:** DHA (*cis*-4,7,10,13,16,19-Docosahexaenoic acid)

**Allergen and Additive Disclosure:** Not manufactured with yeast, wheat, gluten, soy, corn, milk, egg, or shellfish ingredients. Produced in a GMP facility that processes other ingredients containing these allergens. Contains fish (anchovies).

**Delivery Form:** Softgel Capsule [bovine gelatin (BSE-free), glycerin, water].

### ROLE AS NUTRIENT/FUNCTION

DHA is a normal structural component of cellular membranes.\* It affects 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, DHA acts as substrate for the production of various compounds involved in immune function, such as eicosanoids, and serves as a ligand for nuclear receptors influencing gene regulation.\*

### NATUROKINETICS®

**Liberation:** Softgels disintegrate within 60 minutes using a USP water disintegration test.

**Absorption:** DHA is absorbed in the small intestine like other long-chain fatty acids. While in the digestive tract, it is mixed with bile salts and lecithin to form micelles, which are absorbed through the intestine wall. Fatty acids (FA) 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 DHA blood levels increase proportionally along with the increase of daily ingested dose. (Figure 1)

**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

## Supplement Facts

Serving Size 1 Softgel

	Amount Per Serving	% Daily Value
Calories	15	
Total Fat	1.5 g	2%**
Fish Oil Concentrate	1.3 g (1,300 mg)	†
Docosahexaenoic Acid (DHA)	1 g (1,000 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, water] and d-alpha Tocopherol (from sunflower oil).

- 1,000 mg DHA per Softgel
- Supports Brain Health\*

**SUGGESTED USAGE:** Take 1 softgel daily with a meal, or as directed by your healthcare practitioner

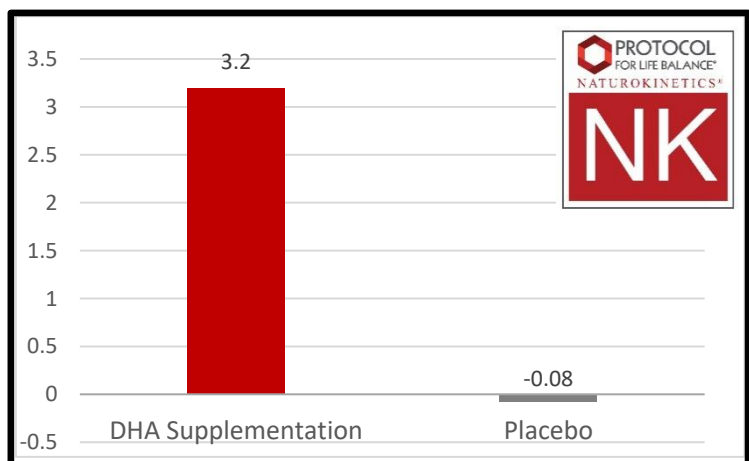


Figure 1: Change in plasma DHA concentration from baseline (weight % of total fatty acids) following DHA (900 mg/day) or placebo for 24 weeks in human volunteers (p = 0.001)

heart. In the brain and retina, DHA exceeds EPA by several hundred-fold. Animal studies confirm that brain tissue, heart, skeletal muscle, red blood cells, bone marrow, retina, and liver content of DHA are increased after supplementation with omega-3 FAs.

**Metabolism:** Up to 12% of the body's DHA is recycled to EPA and docosapentaenoic acid (DPA). DHA is also a substrate for cyclooxygenases and lipoxygenases, and therefore affects the production of eicosanoids and other autocooids, such as resolvins.\* DHA is also a ligand for nuclear receptors and can influence the regulation of gene expression.\*

**Elimination:** DHA has a slower plasma clearance than other omega-3s. After discontinuation of supplementation, DHA concentrations remain elevated for up to 24 weeks, depending on metabolic requirements.

## CLINICAL VALIDATION

- **Brain health support for aging adults.\*** In a randomized, double-blind, placebo-controlled, clinical study, 485 healthy subjects – aged  $\geq 55$  with Mini-Mental State Examination  $>26$  and a Logical Memory (Wechsler Memory Scale III) baseline score  $\geq 1$  standard deviation below younger adults – were randomly assigned to 900 mg/d of DHA orally or matching placebo for 24 weeks. The 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 weeks of supplementation with 900 mg/d DHA improved learning and memory function in this group of healthy older adults.\*
- **Brain health support for young adults.\*** In a randomized, double-blind, placebo-controlled, clinical study, 176 non-smoking healthy subjects with low habitual dietary DHA intake aged 18 to 45 years old were randomly assigned to receive 1.16 g/d DHA (with 170 mg EPA) or matching placebo for 6 months. The DHA group had a significant increase in reaction times on tests for episodic and working memory when compared to placebo.\* Thus, 6 months supplementation with 1160 mg/d DHA improved memory function in this group of healthy adults.\*

## 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.