

# Protect & Restore High DHA Omega-3s



## Clinical Applications

- Supports Early Brain Development\*
- Promotes Brain, Eye, Heart, and Cell Membrane Function Throughout the Lifespan\*
- Supports Immune Health and Eicosanoid Metabolism\*

*Protect & Restore High DHA Omega-3s features patented MaxSimil® DHA monoglyceride fish oil. This readily absorbed omega-3 fatty acid formula provides concentrated docosahexaenoic acid (DHA) plus eicosapentaenoic acid (EPA). DHA is often recommended during pregnancy to support healthy fetal brain development. Throughout the life span, both DHA and EPA support healthy brain, heart, immune, and eye function as well as healthy eicosanoid metabolism.\**

All Feed a Brain LLC Formulas Meet or Exceed cGMP Quality Standards

## Discussion

The two most well-researched omega-3 polyunsaturated fatty acids (PUFAs) are docosahexaenoic acid (DHA) and eicosapentaenoic acid (EPA). DHA is an essential structural component of the central nervous system, and EPA plays a role in supporting healthy cardiac and circulatory systems. Protect & Restore High DHA Omega-3s features MaxSimil DHA. This particular form of the highly absorbable, patented MaxSimil monoglyceride fish oil contains 1,350 mg of concentrated DHA and 236 mg of EPA.\*

### Absorption

Studies conducted by the manufacturer of MaxSimil provide promising results suggesting better absorption than other fish oils. An unpublished, double-blind, crossover, pharmacokinetic study was performed in healthy overnight-fasted male and female subjects (N = 20) ages 19 to 60. Each subject was administered a single dose of six softgels (containing ~2000 mg EPA and ~1500 mg DHA) of either ethyl ester (EE) fish oil or MaxSimil. Compared to the EE form, MaxSimil EPA and DHA reached a peak concentration more than three times higher than that reached by EE fish oil. Moreover, MaxSimil not only reached maximum concentration faster but also maintained plasma levels longer. Additional peer-reviewed research related to bioavailability is warranted.\*<sup>[1-3]</sup>

### Early Brain and Eye Development

Polyunsaturated fatty acids (PUFAs) play a critical role in the normal development of the eye, brain, and central nervous system, and DHA is the most abundant structural fatty acid in these tissues. DHA is transferred directly from mother to fetus during pregnancy, especially during the last trimester, and is available to infants through breast milk. This fatty acid plays a vital role in both prenatal and postnatal brain development. Based on recommendations made by various organizations, pregnant and nursing women should consume 100-300 mg of DHA daily to meet basic fetal and infant needs.\*<sup>[4,5]</sup>

Research indicates that DHA-supplemented and breastfed infants score significantly better on mental and psychomotor development tests and that PUFAs may support normal activity levels and learning capacity during preschool years.<sup>[4,6]</sup> A study of infants (N = 229) enrolled in three randomized controlled trials suggested that a dose of 0.36% of total fatty acids as DHA (a concentration representative of human breast milk) contributed to favorable problem-solving performance, a parameter found to correlate with later IQ and vocabulary development.<sup>[7]</sup> However, the outcome of a systematic review and meta-analysis showed that although omega-3 supplementation does appear to improve childhood psychomotor and visual development, more studies are needed to confirm these conclusions and to explore the significance of IQ later in childhood.\*<sup>[8]</sup>

DHA has also been researched for its role in developing and maintaining eye health and function during early life. A randomized trial of healthy formula-fed infants (N = 244) suggested that infants who were not given DHA had poorer visual acuity than those who were supplemented with DHA amounting to 0.32% of total fatty acids.<sup>[9]</sup> Optimal retinal and visual cortex maturation was understood to depend upon dietary DHA during development, and visual acuity and mental development were "seemingly improved by extra DHA."\*<sup>[6]</sup>

### Nervous System, Brain, Eye, and Cell Membrane Function

Functioning via cell membranes and anchored by phospholipid molecules, DHA helps to optimize signal transmission in the tissues of the brain, eyes, and the overall nervous system.<sup>[10]</sup> Levels of this fatty acid decline with aging. DHA supplementation may play a role in maintaining myelin and neuronal health, supporting healthy eicosanoid metabolism in the brain, and exerting pleiotropic effects to support healthy metabolism and aging throughout the lifespan.\*<sup>[6,11,12]</sup>

A study of healthy community volunteers (N = 280), ages 35-54, showed that higher DHA levels were significantly associated with performance improvement in the areas of nonverbal reasoning, mental flexibility, working memory, and vocabulary.<sup>[13]</sup> Other research has focused on neuroprotectin D1 (NPD1), an important mediator derived from DHA through the action of 15-lipoxygenase-1. This mediator appears to have a positive effect on neurotrophic cell signaling, normal cell-life cycles, beta-amyloid neurobiology, and prostaglandin formation. A systematic review and meta-analysis suggested that omega-3 supplements play a role in improving cognitive development in infants. Although the research summarized in those studies indicated a functional role of DHA in brain health and an effect on attention domain, additional research is needed to further define DHA's role in cognitive function for groups other than infants.\*<sup>[14,15]</sup>

DHA is also required for the functional integrity of retinal pigment epithelium (RPE) cells and may play an ongoing role in eye health and function throughout life.<sup>[10,16]</sup> Studies on human RPE cells suggest that NPD1 orchestrates cell-protective mechanisms (including inhibition of caspase-3 activation and COX-2 expression) and thus promotes a healthy response after cellular insult.\*<sup>[16,17]</sup>

*Continued on next page*

**\*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.**

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Protect & Restore High DHA Omega-3s



# Supplement Facts

Serving Size: 2 Softgels  
Servings Per Container: 15

	Amount Per Serving	%Daily Value
Calories	25	
Total Fat	2.5 g	3% <sup>†</sup>
Cholesterol	15 mg	5% <sup>†</sup>
MaxSimil® DHA Fish Oil Concentrate	2.6 g	**
Total Omega-3 Fatty Acids	1.58 g	**
DHA (docosahexaenoic acid)	1.35 g	**
EPA (eicosapentaenoic acid)	236 mg	**

<sup>†</sup> Percent Daily Values are based on a 2,000 calorie diet.

\*\* Daily Value not established.

**Other Ingredients:** Softgel (fish gelatin, vegetable glycerin, and purified water), GRAS enteric coating (ethylcellulose, sodium alginate, purified water, medium-chain triglycerides, oleic acid, vegetable stearic acid, and ammonium hydroxide), and natural mixed tocopherols.

**Contains:** Fish (anchovy and/or sardine and/or mackerel [sources of fish oil] and tilapia [source of fish gelatin]).

Manufactured using MaxSimil® fish oil. MaxSimil® is a registered trademark of Ingenutra Inc. Protected under US patents 8,119,690 and 8,198,324; Canadian patents 2672513 and 2677670.

## Directions

Take one to two softgels daily, or 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.

## References

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## Does Not Contain

Wheat, gluten, corn, yeast, soy protein, dairy products, shellfish, peanuts, tree nuts, egg, ingredients derived from genetically modified organisms (GMOs), artificial colors, artificial sweeteners, or artificial preservatives.

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