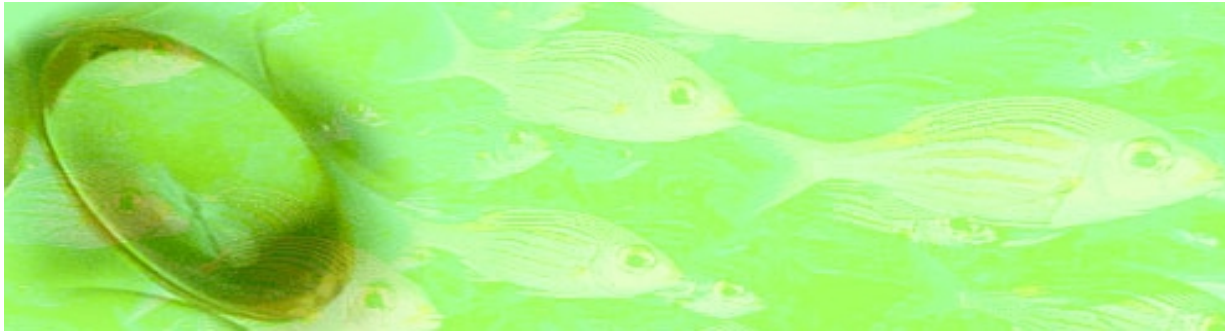
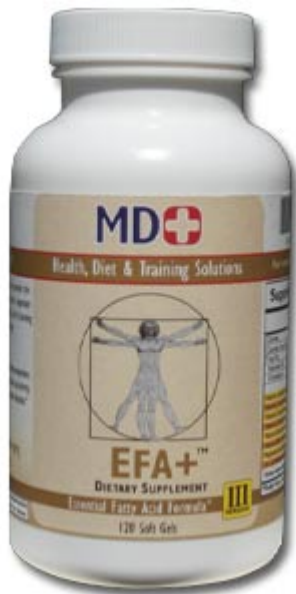




EFA+ Version III



Essential Fatty Acids – Plus



EFA+ is an enhanced essential fatty acid formula containing optimum levels of the essential fatty acids as well as several other additive and synergistic ingredients.

The complex, scientifically based formulation provides much more than other essential fatty acid products.

Besides the essential fatty acids, EFA+ also contains a number of other ingredients that provide a host of other benefits including weight and fat loss, and improvements in body composition.

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The many benefits of EFA+ include:

- 1. Effects on body composition – improved metabolism, enhanced weight and fat loss and retention of muscle mass.**
- 2. Increased insulin sensitivity.**

- 3. Decreased inflammation in the body thus providing cardiovascular, neural, musculoskeletal, and hormonal (including testosterone and growth hormone) health benefits.**
- 4. Improved serum lipid (cholesterol, triglycerides) profile including cholesterol levels.**
- 5. Improved immune system functioning.**
- 6. Improved mental health.**
- 7. Anti-aging effects.**

Dietary Fats and Essential Fatty Acids

Introduction

Dietary fats are essential for normal metabolism and good health. Not only are they necessary for the proper absorption, transportation and function of the fat-soluble vitamins A, D, E, and K, fats are used by the body to produce cellular components, hormones and other compounds that are essential to the proper functioning of the body. As well, a moderate intake of fat is essential for maximizing body composition and decreasing body fat.

But while all fats, including saturated fatty acids, have an important role in energy metabolism and body functions, the most important fats are the essential fatty acids (EFAs) since the body needs them to survive.

While the human body can manufacture most of the fats it needs from other fats, carbohydrates and protein, including cholesterol, saturated fatty acids and unsaturated fatty acids, there are two groups of fatty acids, called essential fatty acids, based on linoleic acid (omega 6 group – which includes GLA) and alpha-linolenic acid (omega 3 group which includes EPA and DHA), which cannot be manufactured in the body.

The body cannot make an omega-3 or omega-6 fatty acid because human metabolism cannot add a double-bond to a fatty acid that is more than 9 carbons away from the delta end. For the same reason, the body cannot interconvert omega-3 and omega-6 fatty acids.

Unfortunately, for various reasons, many people are EFA challenged.

EFA Deficiency

Why are EFAs, especially the omega-3s, deficient in modern diets? Part of the problem is the food that's given to livestock and poultry. It's a lot different from the natural food that these animals would normally consume in the wild or even in the past.

So while both omega-3 (alpha-linolenic acid) and omega-6 (linoleic acid) are plentiful in the leafy plants consumed by roaming animals, providing nearly equal ratios of these EFAs, that's no longer the case when they're switched from grass to grains. The result is that the fat in wild game and grazing ruminant contains roughly seven times more omega-3 fatty acids than animals raised for commercial meat.

Another reason is that processing or cooking changes healthy EFAs into unhealthy trans-fatty acids. So the meat and eggs that we consume today that's already low in omega-3s is even more depleted once it reaches our tables.

As well, we consume a lot of vegetable oils most of which are rich in omega-6 fatty acids and poor in the omega-3s.

The increased omega-6/omega-3 ratio common to our modern diets, but not to man during most of his existence, can give rise to disturbances in cellular structure and function, and an increase in systemic inflammation, which can lead to dysfunction and disease.

So although you can get the EFAs you need from food, you have to know what you're doing and what you're eating (and perhaps more importantly what you're eating was eating), and even then, although you're trying to eat right, you likely will still need to supplement your diet with some of the essential fatty acids.

Omega 3 Fatty Acids

The omega-3s like alpha-linolenic acid (LNA) and eicosapentaenoic and docosahexaenoic acids (known as EPA and DHA respectively) increase fatty acid oxidation (burning of fat), basal metabolic rates, and lower cholesterol.

Omega-3 fatty acids also provide an anabolic effect by increasing the binding of IGF-1 to skeletal muscle and improving insulin sensitivity, even on diets high in fat which have a tendency to decrease insulin sensitivity.¹ As well, fish oils may also have important implications for women prone to osteoporosis since they appear to decrease calcium excretion.²

Omega-3s also stimulate prostaglandin production. Prostaglandins are chemical messengers that regulate activity in body cells on a moment-to-moment basis and are involved in critical functions like blood pressure regulation, insulin sensitivity, immune system and anti-inflammatory responses. They're also involved in a myriad of other functions, many of which have yet to be fully identified.

If you have a problem producing prostaglandins or experience an imbalance between the different kinds of prostaglandins, overall health can be affected. EFA deficiency can lead to many problems including cardiovascular, hormonal, neurological, musculoskeletal, and immune dysfunction.

The Secrets of EFAs: How the Omegas Work

Alpha linolenic acid is the principal essential fatty acid in the omega-3 family and linoleic acid takes the lead in the omega-6 series. In a healthy body with sound nutrition, various metabolic conversions take place transferring the raw dietary materials into usable, biologically potent EFAs and other compounds.

Alpha linolenic acid is transformed into eicosapentaenoic acid (EPA) and later into docosahexaenoic acid (DHA). The series three prostaglandins are formed from EPA. As well, EPA reduces the production of the bad prostaglandins from arachidonic acid.

The omega-6 linoleic acid converts to gamma linolenic acid (GLA). Both the EPA and the GLA synthesized from dietary sources undergo another conversion, resulting in hormone-like biochemical compounds known as eicosanoids. These substances aid in virtually every body activity, from vital organ functioning down to intracellular processes, including helping to regulate inflammation and blood pressure as well as heart, gastrointestinal, and kidney functions.



As such, their use can be preventative and therapeutic for various conditions including some types of cancer, and cardiovascular, neurological and musculoskeletal diseases. Because of their anti-inflammatory properties they are effective anti-aging nutrients. As well, they can be used as an aid for weight loss and for improving body composition.

Benefits of EFA+

As far as the essential fatty acids, EFA+ consists largely of the omega 3 family of essential fatty acids, so as to even out the omega 6/omega 3 ratio to one that is closer to the ratio that man has consumed for most of his existence. Bringing the ratio into line enhances cellular function, decreases inflammation, and improves body composition, health and well-being.

EFA+ contains pharmaceutical grade fish oil with higher levels of EPA and DHA. It's important to include these longer carbon chain omega 3s for two reasons. First of all as first of all the formation of EPA and DHA from ALA is limited and secondly while fish is one method of getting these oils, most sources recommend that fish consumption be

limited to two to three servings weekly because so many fish are tainted with mercury, PCBs and other contaminants.

High-quality, purified fish oil, as found in EFA+ are contaminant free and present a viable alternative to frequent consumption of fish.

EFA+ and Dieting



EFA+ can be beneficial even if a deficiency doesn't exist and, if used properly, can increase overall health, help you avoid heart disease and lose body fat.

Several studies have shown that fish oil increases insulin sensitivity, the breakdown of body fat and the use of fat as a primary energy source. As such, besides decreasing inflammation and increasing cardiovascular health, they also provide substantial weight and fat loss benefits.

EFA+, EPA, and DHA can enhance lipolysis (body fat breakdown)^{3,4} and decrease lipogenesis (body fat formation).^{5,6}

The combined breakdown of stored body fat and decrease in additional body fat can have very positive results for the dieter. You actually end up making less and breaking down more body fat when using these oils.

And EFA+ is even more effective in helping you to get rid of excess body fat when it's used along with my Anabolic, Metabolic and Radical Diets, in which you take in lower amounts of carbs and higher amounts of fats than most diets.

The omega-3s can provide an excellent hedge against worries about cholesterol. For example marine oils are a big part of the diets of Eskimo tribes. Though their higher-fat diet would seem to make them prime candidates for heart disease and atherosclerosis, they've been found to be almost immune to cardiovascular problems, at least until Western dietary influences in recent years. Studies have centered on omega-3 fatty acids in the fish oils and their cardioprotective capacities as being central to this phenomenon.⁷

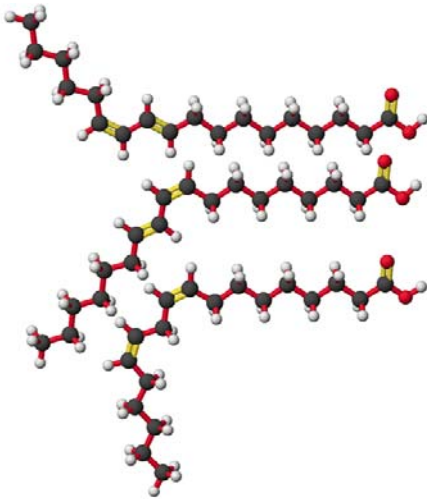
Even in cases where dietary cholesterol is increased, omega-3s may aid in actually lowering serum cholesterol.⁸ There is some evidence to suggest that in higher-fat diets aerobic exercise also reduces serum cholesterol⁹ and thus may improve the effects of omega-3 rich fish oil on cholesterol.

There's no doubt that the omega-3s are a major factor in lowering serum cholesterol levels, preventing coronary heart disease^{10,11} and perhaps even preventing or curing atherosclerosis.¹² As well, Blood pressure, clotting, immune response, insulin resistance, and triglyceride levels are all positively affected by the omega-3s in EFA+.¹³

But there's more to the story.

Since fat-free mass, and particularly muscle mass, is the main determinant of energy expenditure, the possibility of increasing or even maintaining muscle mass is an important consideration. That's where conjugated linoleic acid (CLA), another key EFA+ ingredient, comes in.

Conjugated Linoleic Acid



Conjugated Linoleic Acid (CLA) is a mixture of isomers of linoleic acid, which is found preferentially in dairy products, meat, and in cheese, milks and yogurt that have undergone heat treatment.

CLA has a wide range of biological effects.¹⁴ It has potent antioxidant activity and has shown potential as an anticarcinogen. Studies in animals and humans indicate that CLA supplementation decreases body fat and increases lean muscle mass. The increase in lean muscle mass is most pronounced in individuals who are exercising regularly.

CLA appears to reduce the ability of fat cells to take up fats from the bloodstream; it also inhibits the formation of new fat cells. CLA also helps cells burn fat at a higher rate, while fueling and preserving muscle, leading to a reduction in fat and an increase in lean muscle mass.

Numerous physiological effects in relation to body-weight control have been attributed to CLA in animals. In different animal models, CLA has been shown to reduce body fat and to increase lean body mass.^{15,16} A recent long term study found that a mixture of the two CLA isomers significantly lowered body fat mass in overweight humans at both 1 and 2 years.^{17,18}

As well, CLA seems to have significant effects on weight regain, as it reduces fat uptake into adipocytes by decreasing the formation of fat and but not affecting fat breakdown. It likely does this by affecting various enzymes involved in lipid formation rather than enhancing fat breakdown, known as lipolysis.^{19,20,21}

Thus there is an overall increase in fat breakdown since the two processes are usually in dynamic equilibrium with as much fat being produced as is broken down. Decreasing fat formation changes the dynamics to one of overall increased fat breakdown and subsequently a decrease in overall body fat.

The bottom line is that EFA+ has significant effects on weight and fat loss, and increases overall health and well being.

EFA+ and Mental Health

Mental Health

While it's generally known that EFAs are good for the cardiovascular system and for arthritis, it's not as well known the EFAs can affect mental health. In fact, a deficiency in EFAs or too little omega 3 fatty acids can lead to decreased mental health, depression and even aggressive tendencies.

EFAs have been shown to assist in treating depression and other mental health conditions. Low levels of omega-3 EFAs are common in depression. In one 2002 study, researchers found that treatment with 1 g/d of **EPA** improved outcomes in patients with persistent depression.²² Another study found that EPA may prove an effective add-on treatment in schizophrenia.²³

There is even some evidence that the decrease in omega 3 consumption may be responsible for increasing homicide rates.²⁴

Part of omega-3's effectiveness in treating brain disorders and the reason why lack of omega 3's results in some mental aberrations may be linked to its role in neurotransmission and brain development. **DHA** in particular is crucial for proper brain function, and pregnant women are advised to consume adequate levels for fetal brain development.

A recent paper published in 2005 concluded:²⁵

There is no doubt that cerebral lipids, and EFA-derived LC-PUFAs in particular, have significant direct and indirect actions on cerebral function. Not only does the lipid composition of neural membranes affect the function of their embedded proteins, but also many LC-PUFAs are converted to neurally active substances. There is good evidence that psychiatric illness is associated with depletion of EFAs and, crucially, that supplementation can result in clinical amelioration. As well as challenging traditional views of aetiology and therapeutics in psychiatry, the clinical trial data may herald a simple, safe and effective adjunct to our standard treatments for many disabling conditions.

As well, other ingredients in EFA+ enhance the effects of the EFAs on brain function. For example, **choline** is a precursor to the cell-membrane component **phosphatidylcholine** and to the neurotransmitter acetylcholine. Both, plus **phosphatidylserine** and **serine** have been found to enhance certain aspects of cognition and decrease stress.^{26,27}

EFA+ and Inflammation

EFA+ decreases inflammation by providing a number of potent antioxidants (glutathione, alpha lipoic acid, zinc, vitamin A, vitamin C, and vitamin E), specific omega 3 and omega 6 fatty acids, conjugated linoleic acid (CLA).

These ingredients decrease key inflammatory mediators such as proinflammatory cytokines (including TNF-a, IL-6, and IL-1), anti-inflammatory cytokines (including IL-10 and interferon-g), and eicosanoids (prostaglandins, leukotrienes).

For example CLA has been shown to have significant anti-inflammatory properties²⁸ and to inhibit inflammatory mediators such as PGE2, IL-6, and TNF-alpha,^{29, 30} and also acts as a COX-2 inhibitor.^{31, 32}

Gamma linolenic acid (GLA) is produced in the body from linoleic acid an essential fatty acid of omega-6 series by the enzyme delta-6-desaturase. GLA is further metabolized to dihomogamma linolenic acid (DGLA) which undergoes oxidative metabolism by cyclooxygenases and lipoxygenases to produce anti-inflammatory eicosanoids (prostaglandins of series 1 and leukotrienes of series 3), and thus has significant anti-inflammatory effects.³³

Linoleic and alpha-linolenic acid have direct effects by altering the cell membrane fatty acid composition (as do choline, phosphatidylcholine and phosphatidylserine – see below) and modulating cell/tissue response to inflammatory events.

Increased intake of GLA, and EPA/DHA, substantially decreases the inflammatory response by a number of mechanisms. A number of studies indicate that GLA, DGLA, EPA and DHA possess anti-inflammatory actions lead to an early resolution of inflammation - attributed to decreased formation of pro-inflammatory eicosanoids and cytokines [105], and an increase in the production of beneficial eicosanoids such as PGE1, PGI2, PGI3, HPETEs, eNO, LXs, resolvins and NPD1.³⁴

The antioxidants in EFA+ also play an important role in decreasing inflammation since it's been shown that reactive oxygen species play a key role in enhancing the inflammatory process.³⁵

Alpha lipoic acid also has significant anti-inflammatory properties and has been shown to inhibit IL-1, a proinflammatory cytokine and also inhibit the synthesis of PGE2 by inhibiting COX-2 activity.

This latter mode of action, along with similar effects from CLA, simulates the anti-inflammatory effects of the present class of NSAIDS such as Celebrex, Advil, Aleve, etc. As well, EFA+ contains fish oil with substantial amounts of DHA and EPA, which has also been shown to have effects similar to the anti-inflammatory prescription and OTC drugs.³⁶

Ingredients in EFA+

I formulated EFA+ to be a balanced combination of essential fatty acids (EFAs), and other ingredients that work additively and synergistically to maximize the beneficial effects of the essential fatty acids on health, inflammation and body composition.

For example, the co-factors **zinc, magnesium, Vitamins. C, B3 and B6** must be present for the benefits of the essential fatty acids to be realized.

Some of the added vitamins and minerals, besides optimizing the use of the essential fatty acids, also have other beneficial properties related to the effects of the essential fatty acids. For example **vitamins B3 and B6** have significant antioxidant properties and also beneficial effects on serum cholesterol and triglycerides. **Magnesium and zinc** are also heart friendly and have beneficial effects on the immune, cardiovascular and neuromuscular systems.

EFA+ also contains several lipotropic factors and other ingredients, including **conjugated linoleic acid, L-carnitine, methionine, serine, choline** and **inositol** that optimize the utilization, transport and metabolism of fat, working to decrease body fat, normalize serum lipids including cholesterol, enhance energy levels, and fight inflammation in the body.

The **antioxidants** present in EFA+ serve several purposes. First of all they help preserve the natural state of the EFAs by protecting them from oxidative damage and becoming rancid while in the capsule so that what you get are all the good effects that EFA+ has to offer and none of the bad.

That's one of the reasons why EFA+ combines several antioxidants, including **vitamin A, vitamin C, vitamin E, conjugated linoleic acid (CLA), alpha lipoic acid,** and **glutathione**, with fish oil and other sources of essential fatty acids.^{37, 38}

As well, the association of antioxidants with the omega-3 essential fatty acids, such as the fish oil and other ingredients found in EFA+, act in concert to enhance the beneficial effects of the essential fatty acids on inflammation and on the immune and cardiovascular systems.^{39,40}

On top of all this the antioxidants counteract some of the adverse effects that these essential fatty acids might have. For example, although it's been shown that fish oil increases oxidation of LDL cholesterol, the "bad" cholesterol in the body that's been implicated in cardiovascular disease, it has also been shown that the use of antioxidants counteracts this negative effect of fish oil.^{41,42}

Omega-3, 6 and 9 Oils

EFA+ contains omega 3, 6 and 9 fatty acids, including EPA and DHA, the longer chain fatty acids found mostly in fish oil. The plant based oils are mechanically pressed under low heat, light and oxygen-free environment ensuring the extremely high quality of the

formula. As well, pharmaceutical grade fish oil is used in the formulation. The formula is mercury free and free of harmful trans fatty acids.

The emphasis in EFA+ is on the omega 3 essential fatty acids and on GLA, an important omega 6 fatty acid, but EFA+ also contains omega 6 linoleic acid as part of flax seed oil and oleic acid, an omega-9 fatty acid, which is also present as a natural constituent of flax seed oil.

Omega 3 and omega 6 fatty acids are precursors for hormones and determine the composition of our cell membranes, influencing the production of pro- and anti-inflammatory substances.⁴³

Omega-3 fatty acids, found in fish oils (mainly **EPA** and **DHA**) and flaxseed oil, have been shown to:

- Reduce oxidant stress⁴⁴ (oxidative stress or free radical damage is a factor of importance in the development of inflammatory events).
- Suppress the production of pro-inflammatory compounds in the body and therefore influence inflammatory conditions such as **arthritis, diabetes, inflammatory bowel disease, cancer, autoimmune disorders, and aging.**^{45,46,47,48,49,50,51,52,53,54,55,56,57}
- Improve serum lipids and provide cardiovascular protection,^{58,59,60,61}
- Provide protection against stress,⁶² cognitive aging^{63,64} and depression.⁶⁵
- Aid in weight and fat loss, especially when combined with CLA (see below).

Conjugated Linoleic Acid

Conjugated Linoleic Acid (CLA) is a mixture of isomers of linoleic acid, which is found preferentially in dairy products, meat, and in cheese, milks and yogurt that have undergone heat treatment.

CLA has a wide range of biological effects. It has potent antioxidant and anti-inflammatory activity and has shown potential as an anticarcinogen.

Studies in animals and humans indicate that CLA supplementation decreases body fat and increases lean muscle mass. The increase in lean muscle mass is most pronounced in individuals who are exercising regularly.

CLA appears to reduce the ability of fat cells to take up fats from the bloodstream; it also inhibits the formation of new fat cells. CLA also helps cells burn fat at a higher rate, while fueling and preserving muscle, leading to a reduction in fat and an increase in lean muscle mass.

Gamma linolenic acid (GLA) is important for health and has suppressive effects on both acute and chronic inflammation, and effects on decreasing the response to anxiety and stress.^{66,67,68,69,70,71} It also works synergistically with some of the essential fatty acids to decrease inflammation and stress responses.^{72,73,74}

GLA is needed by the body for the manufacture of certain hormone-like substances called Prostaglandins. These substances have beneficial regulatory effects on the immune system, circulation and the menstrual cycle. Their purpose is to help control and regulate cell growth and to maintain hormonal balance. Also helps to maintain healthy skin.

The use of EPA with GLA (as in EFA+) decreases some of the possible inflammatory effects of using GLA supplements. That's because GLA can be a precursor for arachidonic acid (AA, a "bad" type of prostaglandin that increases platelet aggregation and inflammation) and the addition of EPA reduces AA accumulation in some cells and tissues secondary to GLA supplementation.⁷⁵

Choline, Phosphatidylcholine, Phosphatidylserine, Serine and Policosanol

Choline, phosphatidylcholine, phosphatidylserine, and serine are involved in phospholipid metabolism and augment the effects of the EFAs on cell wall structure and integrity, as well as molecular signaling properties.⁷⁶ These ingredients are needed for cell membrane integrity and to facilitate the movement of signaling compounds between cells and the movement of fats in and out of cells.⁷⁷ They have significant effects on nerve cell membranes, and are required for nerve growth and function.⁷⁸

Policosanols are a blend of compounds isolated from natural plant waxes. **Policosanol** contains several long chain fatty alcohols, including octocossanol, hexacosanol and triacontanol. Animal and in-vitro research has shown that these compounds may support the cardiovascular system and inhibit lipid peroxidation as well as support macrophage activity.

Policosanol helps lower cholesterol levels by slowing the body's own production of cholesterol in the liver, as well as reducing the risk of blood clots and enhancing circulation. Some studies have shown that policosanol, like some EFAs can significantly reduce both total cholesterol and LDL (bad) cholesterol.^{79,80,81,82}

EFA+: A great way to get EFAs and then some

The bottom line is that EFA+ is a multi-purpose formulation designed to provide the full gamut of all the essential fatty acids and supporting ingredients that are so important in optimizing your metabolism, enhancing weight loss, body composition, and the anabolic and fat burning effects of exercise, boosting your immune system and decreasing counter productive inflammation in the body secondary to exercise, aging and various diseases.

EFA+ Nutritional Panel

Supplement Facts:		Serving Size: 4 Softgels			
		Servings Per Container: 30			
	Amount Per Serving	% Daily Value			
			Amount Per Serving		
			% Daily Value		
Calories	34		Glutathione (Reduced)	100 mg	*
Calories From Fat	34		Alpha Lipoic Acid	150 mg	*
Total Fat	3.8 g	6%	GLA (Gamma Linoleic Acid) (from Borage Oil Extract)	300 mg	*
Saturated Fat	0.4 g	2%	Flaxseed Oil	1000 mg	*
Cholesterol	0 mg	0%	CLA (Conjugated Linoleic Acid)	150 mg	*
Vitamin A (as Retinyl Palmitate)	2,000 IU	40%	Omega-3 Fish Oil	1000 mg	*
Vitamin C (as Ascorbic Acid)	100 mg	167%	• EPA (Eicosapentaenoic acid)	330 mg	
Vitamin D (as Cholecalciferol)	100 IU	25%	• DHA (Docosahexaenoic acid)	220 mg	
Vitamin E (as dl-Alpha Tocopheryl Acetate)	100 IU	333%			
Vitamin B3 (as Niacinamide)	10 mg	50%	EFA+ Proprietary Blend 470 mg		
Vitamin B6 (as Pyridoxine HCL)	10 mg	500%	Choline, Inositol, Methionine, Phosphatidylcholine,		
Magnesium (as Magnesium Chelate)	100 mg	25%	Lecithin (12% Phosphatidylcholine), Policosanol, Serine		
Zinc (as Zinc Monomethionine)	10 mg	67%			
Other Ingredients: Gelatin, Water, Glycerin, Sorbitol, Natural Caramel Color, Titanium Oxide. Bees wax					
*Daily Value Not Established					



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