

QUICK FACTS:

HOW MUCH DO I TAKE ?

The anti-inflammatory effect from fish oil is dose dependent & the minimum effective dose is 2.7 grams of EPA daily. Higher doses are safe and effective. Depending on your medical problems, we will recommend one of the following **daily** doses**:

- ___ 3 gm / day of EPA + DHA (2 tsp or 5 capsules)
- ___ 5 gm / day of EPA + DHA (1 Tbsp or 8 capsules)
- ___ 7 gm / day of EPA + DHA (5 tsp or 12 capsules)
- ___ 9 gm / day of EPA + DHA (2 Tbsp or 15 capsules)

** ONLY count combined milligrams from long chain omega-3s EPA and DHA.

WHAT DO I BUY ?

- **Pharmaceutical grade** fish oil. This ensures that mercury, PCBs and dioxins have been removed.
- **Oil form** - We recommend the oil due to the substantial intake that is required for an anti-inflammatory effect.

WHAT BRAND DO I BUY ?

The following brands have been given 5 STARS by the International Fish Oil Standards (IFOS) organization:

Brand	Price / 1g EPA +DHA
Vital Nutrients	\$ 0.22/g
Innate Choice	\$ 0.35/g
Life Extension	\$ 0.35/g
A-M B-Well Inc	\$ 0.40/g
See Yourself Well Inc	\$ 0.42/g
Zone Labs	\$ 0.49/g
Nordic Naturals	\$ 0.50/g
Genuine Health	\$ 0.53/g
Ascenta Health	\$??????
Andrew Weil	\$ 0.72/g
Theralogix	\$ 0.76/g

HOW TO TAKE FISH OIL

- Only buy citrus or peppermint flavored fish oil. We recommend the regular strength oil by **Vital Nutrients** as it has NO fish taste and is one of cheapest
- Take immediately **before** a solid meal and without further liquid, esp aerated
- Split the dose between meals
- Possible Technique:
 - (1) Pour two 30-50ml shot glasses full of juice (orange, tomato, apple, etc)
 - (2) Layer the desired dose of fish oil onto the juice in one glass - do not stir

(Continued on page 2)

Fish Oil

Omega-3 Fatty Acid Supplementation

The types of fat that you eat have a lot to do with the type and amount of inflammation that your body will produce. *Silent Inflammation* is believed to be the primary common pathway to the main cause of a number of chronic diseases - including heart disease, stroke, diabetes, cancer, rheumatologic diseases, osteoarthritis and many gastrointestinal problems.

The two essential fatty acids (EFAs) that we need in our diets are linoleic acid (LA), which is an omega-6 fatty acid and alpha linolenic acid (ALA), which is an omega-3 fatty acid. These two poly-unsaturated fatty acids (PUFAs) are referred to as essential because they cannot be made by the body, hence, they must be obtained from the diet. For the scientifically inclined, omega-3 or n3 PUFAs contain a double bond at the 3rd carbon position (and 6th) whereas the more common omega-6 or n6 PUFAs found in food contain their first double bond at the 6th carbon position.

LA and ALA are the building blocks for a family of fatty acids, of which the longer chain derivatives are particularly important. The long chain (LC) omega-3 fats, *docosahexaenoic acid (DHA)* and *eicosapentaenoic acid (EPA)* can be made in the body from alpha-linolenic acid, by chemical processes known as chain elongation and desaturation but the conversion to DHA is not very efficient in humans.

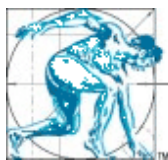
The 'industrialized' Western diet is very high in omega-6 PUFAs and very low in omega-3 PUFAs. Cultures that have a high dietary fish intake (Japanese, Inuits) have very low rates of these 'Industrialized' associated diseases noted above because their diet is very high in LC omega-3 PUFAs. Fish and fish oil serves as the only meaningful source of LC omega-3 PUFAs.

There is now a very large body of 'mainstream' evidence that demonstrates that EPA and DHA can significantly reduce cardiovascular risk thru multiple mechanisms and decrease inflammation and pain associated with arthritis, especially rheumatoid arthritis.

The ratios of fatty acids in the tissues are largely determined by the respective ratios in the diet. The typical American diet has an arachidonic acid or AA/EPA (omega-6 to omega-3) ratio > 20:1. For anti-inflammatory purposes, the ideal or desired ratio is 2:1. This can only realistically be achieved through omega-3 fish oil supplementation.

MORE FACTS on Omega-3 Fatty Acids:

- The symptomatic benefit from fish oil can be noticed as early as 2-3 weeks, but response can be delayed for 2-3 months.
- People who self medicate with fish oil generally take only 1-2 capsules per day. Though this may provide some cardiovascular benefit, it is an insufficient amount for any anti-inflammatory effect.
- Though fish oil, like any fat, has calories - fish oil taken before a meal will add to your sense of fullness. Studies have shown that fish oil can reduce fat tissue and body weight.
- LC omega-3 fatty acid food sources are breast milk and seafood such as salmon, sardines, herring, halibut, and tuna. See the tables at the bottom of page 2 for more details. Fried fish and fish sandwiches seem to be less beneficial. Frying may inactivate the omega-3 fats in fish, so it is best to prepare the fish by broiling or baking.



- The LC omega-3 FAs EPA and DHA are a much better source of omega-3 than the SC ALA, typically found in flax seed oil. Although ALA can be converted in the body to EPA & DHA, it's a very poor and inefficient conversion, and there are many factors that further inhibit this conversion including excess alcohol, caffeine, smoking, aging, high cholesterol and saturated fats, high sugar diets and vitamin and mineral deficiency (such as zinc, chromium and B6).
- All fish have some level of mercury contamination. The fish with the highest mercury content are generally those with the longest lives and those at the top of the food chain - tilefish, swordfish, mackerel and shark.
- Fish also contain carcinogens (cancer causing substances) and neurotoxins - such as dioxin and polychlorinated biphenyls (PCBs). PCBs are most commonly found in freshwater fish that live in inland lakes (bluefish, lake trout and smelt). The contamination of fish varies in each region of the United States. For more information, go to : <http://www.epa.gov/waterscience/fish/states.htm>.

Fish Type 3-oz serving (steamed or baked)	Omega-3 Content (EPA & DHA, in grams)
SALMON, ATLANTIC	1.8g
HERRING, ATLANTIC	1.7
SALMON, PINK, CANNED	1.4
WHITEFISH	1.4
TUNA, BLUEFIN	1.3
MACKEREL, ATLANTIC	1.0
TROUT, RAINBOW	1.0
BLUEFISH	0.8
SARDINES, OIL-CANNED	0.8
MUSSELS, BLUE	0.7
TUNA, WATER-CANNED, WHITE	0.7
BASS, FRESHWATER	0.7
SHARK (fried)	0.6
POLLOCK, ATLANTIC	0.6
CRAB, ALASKAN KING	0.5
HALIBUT	0.4
SOLE/FLOUNDER	0.4
MACKEREL, KING	0.4
OYSTERS (raw)	0.3
PERCH, OCEAN	0.3
SHRIMP	0.3
CATFISH, FARMED	0.3
CLAMS	0.2
COD, PACIFIC	0.2
TUNA, WATER-CANNED, LIGHT	0.2
TUNA, OIL-CANNED, LIGHT	0.2

Adapted from USDA Nutrient Data Laboratory and 2004 Consumer Reports Listing

omega-3 oil from high quality, filtered, third party tested, **pharmaceutical grade fish oil supplements**. See www.ifosprogram.com.

- 3 Types of fish oil supplements can be purchased:
 - 1) Cod liver oil (see right column)
 - 2) Health grade
 - 3) Pharmaceutical grade

Food Type	Omega-3 Content (a-Linoleic Acid in g/Tbsp)
Olive oil	0.1
Walnuts, English	0.7
Soybean oil	0.9
Canola Oil	1.3
Walnut Oil	1.4
Flaxseeds	2.2
Flaxseed (linseed) oil	8.5

Adapted from USDA Nutrient Data Laboratory

- Pharmaceutical Grade Fish Oil standards are as follows:
 - 1) > 60% of the LC FAs acids must be EPA & DHA
 - 2) AA/EPA ratio must be less than .04
 - 3) PCBs per gram of oil should have a much lower level of 45 ppb

- Vital Nutrients** - our product of choice: minimizes Dioxin and PCB exposure to the parts per trillion and toxic metal contamination (lead, mercury, cadmium, arsenic, and aluminum) to the parts per billion level. These stringent criteria are equal to or greater than any other company.

Fish oil should NOT be combined with anticoagulant therapy coumadin until first consulting your doctor.

MORE QUICK FACTS:

HOW TO TAKE FISH OIL

- Possible Technique:
 - (3) Swallow in a single gulp, avoiding any contact with the lips
 - (4) Immediately sip the juice from the other glass slowly through the lips
- If a problem still exists - consider lying on your left side after fish oil ingestion and some food consumption - this will promote passage of the oil into the duodenum
- Occasionally, some people will tolerate capsules better

HOW SHOULD MY DIET CHANGE ?

- Avoid** n6 PUFAs in visible fats - spreads, cooking oils (sunflower, cottonseed, peanut, soybean products), mayonnaise, nuts (peanuts, cashews, brazil, hazel)
- Avoid** products labeled as containing polyunsaturated oils, this usually means high in n6 fats
- Avoid** cod liver oil - though it does contain decent amounts of LC n3 PUFAs, it also contains vitamins A & D. At anti-inflammatory doses, the dose of vitamin A is toxic
- Avoid** saturated & man-made hydrogenated fats
- Choose** foods rich in monounsaturated fats (MUFAs) - olive & canola oil, macadamia nuts & almonds
- Choose** foods high in short chain omega-3 fats - flaxseed, flaxseed oil, canola oil, soy, soybean oil and nuts (especially English Walnuts), dairy products, broccoli, green leafy vegetables, wheat germ and beans (especially pinto beans)
- Choose** these fish often - flounder, farmed rainbow trout, sole, anchovies, and farmed clams and shrimp - they do not seem to provide any health hazard.
- Choose** these fish in moderation, such as once a week - cod, farmed catfish, mahi mahi, wild salmon, tilapia, and canned chunk tuna.

NSAIDS VS FISH OIL

- Unlike NSAIDS (non-steroidal anti-inflammatory drugs), fish oil is not associated with gastric irritation or cardiovascular side effects
- Fish oil tends to decrease blood pressure by a moderate amount, whereas NSAIDS tend to increase it by a similar level
- EPA directly inhibits multiple points of the inflammatory pathway vs NSAIDS single inhibition of the COX enzyme
- Studies show Fish oil use can decrease NSAID use by > 50%

STATINS VS FISH OIL

- In a recent 2006 meta-analysis in *Archives of Internal Medicine*, fish oil created a better change in a patients cholesterol panel than statins - by increasing HDL (good cholesterol) while decreasing triglycerides and total cholesterol
- Like statins, fish oil seems to have a cardiovascular benefit in reducing total cardiovascular events beyond simply lowering cholesterol. One study noted a 53% reduction in cardiac events after a first heart attack