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The Many Benefits of Fish Oil

In the 1980s, researchers first began noticing the native Inuit (Eskimo) populations of Greenland and Alaska had a very low occurrence of heart disease despite a very high-fat diet. The researchers discovered the oils in the deepwater fish these people consumed (and continue to eat to this day) are rich in omega-3 polyunsaturated fatty acids.^{1,2} These early scientific observations spawned extensive study and led to the current understanding of how important fish oil is to heart health.



Q. How can a high-fat diet be good for your heart?

A. While we generally think of fats as harmful, there are fats that actually have health benefits. The key is to learn the difference between the “good” fats and the “bad” ones.

All natural fats are mixtures of different types of fatty acids. Fatty acids are made up of carbon atoms comprised of short or long chains. Each carbon atom has four bonding sites (similar to imaginary arms) where it can attach to other atoms. If all binding sites are attached to hydrogen atoms, the fatty acid chain is saturated.^{3,4}

If some binding sites on a carbon atom are attached to a neighboring carbon (made with a double bond), the fatty acid chain is unsaturated. If a fatty acid chain has two or more double bonds, it is called polyunsaturated.^{4,5}

Polyunsaturated fatty acids are

further classified by where on the carbon chain the double bond is located. Linoleic acid is a polyunsaturated fatty acid with the first double bond located at the sixth carbon atom from the omega end; thus, it is an omega-6 fatty acid.^{4,5}

Linolenic acid, an omega-3 fatty acid, has its first double bond at the third carbon from the omega end. Both linoleic and linolenic fatty acids are essential fatty acids. These polyunsaturated fatty acids are needed to sustain life. However, while some fatty acids can be made in the body, these cannot. Both omega-3 and omega-6 fatty acids must be consumed in the diet.^{4,5}

The daily requirement for linoleic fatty acid is two teaspoons, which is easily met in the American diet. Linoleic acid is found in commercial baked goods, prepared foods, vegetable oils, and margarine. These foods are abundant and

are often consumed in large amounts.³

Q. What’s different regarding omega-3 fatty acids?

A. Omega-3 fatty acids are notably absent from the American diet. Eicosapentaenoic acid (EPA), which is derived from linolenic acid, is the main omega-3 fatty acid in fish. Docosahexaenoic acid (DHA) is yet another omega-3 fatty acid found in fish. Both EPA and DHA are responsible for many impressive health benefits.^{4,5}



Fatty acids are an important component in cell membranes. The cell membrane surrounds the cell and controls what enters and exits the cell, protecting the cell. When fatty acids are saturated with hydrogen atoms, their chains are rigid and straight. When cell membranes are composed of saturated fatty acid chains, they are closely packed together, creating cell membranes that are rigid and stiff.⁴ Polyunsaturated fatty acids have double bonds between carbon atoms. These double bonds allow for a flexible, curved structure. When cell membranes are composed of polyunsaturated fatty acids, they are flexible and elastic. Cell membranes that are flexible are healthier than rigid and stiff cell membranes.^{4,5}

Human hearts that are made up of cells with rigid membranes are more susceptible to disease. The good news is that hearts comprised of flexible membranes are healthier and less

likely to develop heart disease.⁵

Q. What kind of heart problems can fish oil help?

A. There has been a vast number of clinical trials and scientific study on the effect of omega-3 fatty acids and heart disease. Impressive results have been noted in lowering the risk of heart attacks and reducing blood pressure.

One recent study examined the blood levels of men who lived in Finland, where fish consumption is fairly high. The men who had the highest levels of DHA and EPA had a 44% reduced risk of acute heart attacks compared to men who had the lowest levels of these omega-3 fatty acids.⁶

The effects of dietary fish and weight reduction also were examined in a study of overweight people with high blood pressure (hypertension). The subjects were divided into four groups. One group served as the control and did not receive treatment. The second group ate a daily meal of fish that contained 3.65 grams of omega-

3 fatty acids. The third group went on a weight-reduction diet. And, the fourth group

combined the meal of daily fish and the weight-reduction diet. Effects on blood pressure were greatest in the combined group. Their blood pressures dropped more than 13 points, much more than the other groups.⁷

Another study of blood pressure and omega-3 fatty acids determined supplementation with EPA and DHA was effective in reducing the blood pres-

sure in individuals with hypertension. Blood pressures dropped by six points during supplementation, but returned to baseline after the study was completed.⁸ Omega-3 fatty acids have also been shown to reduce risk factors that can lead to heart attacks. Two groups of men living in Portugal were compared. One group lived in a farming village and had a low fish intake. The other group was made up of fishermen who normally ate a diet high in fish. The group in the fishing village had lower serum triglyceride levels and total cholesterol levels, both heart attack risk factors.⁹

Women who have gone through menopause have a higher risk of heart attacks than other women. It was determined that fish oil supplements lowered serum triglyceride levels and increased highdensity cholesterol levels. The study concluded fish oil supplementation reduced the risk of heart attacks by 27% in postmenopausal women.¹⁰

Q. Are there any other diseases fish oil might help?

A. Research has shown fish oil may be beneficial in combating several

diseases. Studies have shown omega-3 fatty acids can reduce the risk of strokes¹¹, improve asthma in children¹², and increase the survival time of individuals with cancer.¹³⁻¹⁷ In addition, use of fish oil supplements improved nutritional status and increased weight in cancer patients who have lost a significant amount of weight.^{18,19} People with severe

HEALTH FACT:

Omega-3 fatty acids (which are present in fish oil) have been shown to reduce risk factors that can lead to heart attack

depression often have low levels of omega-3 fatty acids. Low levels of DHA have also been found in the time after pregnancy known as the postpartum period. Studies have found that supplementation with fish oil helps relieve the symptoms of depression, and may also help treat other mental illnesses such as bipolar disorder.^{20,21} There have also been some impressive results in treating patients with systemic lupus erythematosus²², rheumatoid arthritis²³, and multiple sclerosis.²⁴

Q. Couldn't eating more fish provide the same benefits?

A. Not all species of fish have high levels of DHA and EPA. Anchovies, salmon, mackerel, tuna, sardines, and herring are the best sources of these omega-3 fatty acids.³ To achieve the most benefit from eating fish, choices should be made from this list.

Native Inuit, the people that were initially the focus of the studies on fish oil, often consume four to five grams of EPAs daily. This equals one and one-half to three pounds of fish³ and is much more than many people would care to eat.



Thankfully, using a fish oil supplement can provide these beneficial omega-3 fatty acids in an easy-to-take form.

Q. I have heard that some fish oil supplements have artificially increased the amounts of DHA and EPA in their fish oil. Does this make the supplements even more beneficial?

A. Fish oils may naturally contain DHA and EPA, or they may be modified to artificially boost

the concentration of DHA and EPA. Recent Norwegian studies have demonstrated that modified fish oils are the least stable and most likely to become rancid.^{25,26}

.An unstable fish oil can actually cause an increase in free radical formation in the blood and tissues. Free radicals can contribute to less flexible blood vessels that may occur with aging or disease.

Additionally, the over processing of fish oil supplements can result in a loss of key nutrients and thus decrease their effectiveness.²⁵⁻²⁷

Q. I have heard that toxins in the waters from which fish are harvested are also found in these fish. Aren't the oils that come from these fish also contaminated?

A. Purity in fish oil supplements is very important. Fish oil supplement manufacturers should be able to provide documentation of contaminant levels in their products. Supplements should contain no detectable dioxin (a widely used toxic preservative), DDT (a toxic insecticide), PCB (polychlorinated biphenyls), or heavy metals such as mercury and lead.

Q. How can I make sure fish oil capsules will remain fresh?

A. Choose a fish oil that's not artificially modified to boost the concentration of DHA and EPA and that has added natural antioxidants, including vitamin E, to prevent rancidity and provide superior taste and efficacy. Refrigerating the container after opening is often recommended.

Conclusion

Fish oil supplements are a rich source of the polyunsaturated omega-3 fatty acids, EPA and DHA. These fatty acids lower

blood pressure, and reduce the risk of heart attacks and strokes. In addition, EPA and DHA may benefit individuals with asthma, multiple sclerosis, systemic lupus erythematosus, and cancer. Fish oil supplements provide a natural yet powerful choice in personal health improvement.

“The EPA and DHA in fish oil may benefit individuals with asthma, multiple sclerosis, systemic lupus erythematosus, and cancer.”



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