



## HEALTH BENEFITS OF OMEGA-3 FATTY ACIDS

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### **Abstract**

*Omega 3 fats are known to lower the production and secretion of VLDL (very low density lipoprotein) that causes atherosclerosis and development of heart disease. By helping to maintain a healthy lipid profile, omega-3-fats help in preventing heart disease. Omega-3 fats play an important role in the production of prostaglandins which are known to regulate important physiological functions like blood pressure, blood clotting, nerve transmission, allergic responses, etc. Various studies have found that fish oil supplements EPA and DHA significantly reduced stiffness and joint pain of rheumatoid arthritis (RA). They also seem to enhance the efficacy of anti-inflammatory drugs. Researchers have found that people eating foods with high levels of omega-3fats have lower levels of depression. Fish oil also seems to increase the effects of antidepressants and help to reduce mood swings. Omega-3 fatty acids may help to increase calcium levels in the body thereby improving bone strength. People with deficiency of essential fatty acids EPA and GLA may have more bone loss than those with normal levels of these fatty acids. Omega 3 fats are plentiful in natural sources like fish including salmon, mackerel, sardines, tuna and herring and vegetarian sources including soybean, flaxseed, pumpkin seeds, spinach, walnuts and salad greens. Omega-3s accumulate in the human brain during fetal development. Approximately 8% of the brain's weight is comprised of omega-3 fatty acids—the building block for an estimated 100 billion neurons. 4 Docosahexaenoic acid (DHA) and eicosapentaenoic acid (EPA) play a host of vital roles in neuronal structure and function, protecting them from oxidative damage, inflammation, and the cumulative destruction inflicted by other chronic insults. People who get more omega-3s actually have bigger, more functional brains. Now a day s people are suffering from more health problems and that can be reduced by enlightening the people about the important health benefits of omega-3 Fatty acids.*

**Key Words:** *Omega 3 Fats, Sources, Import Ants, Health Benefits & Effect of Deficiency.*

### **INTRODUCTION**

Omega-3 fatty acids are considered as essential fatty acids. They are necessary for human health but the body can't make them, it can be got through food. Omega-3 fatty acids can be found in fish, such as salmon, tuna, and halibut, other seafood including algae and krill, some plants, and nut oils. Omega-3 fatty acids play a crucial role in brain function, as well as normal growth and development. The American Heart Association recommends eating fish (particularly fatty fish such as mackerel, lake trout, herring, sardines, albacore tuna, and salmon) at least 2 times a week may reduce the risk of heart disease. This article may enlighten about the importance of Omega-3 fatty acids.

### **Dietary Sources**

Fish, plant, and nut oils are the primary dietary source of omega-3 fatty acids. Eicosapentaenoic acid (EPA) and docosahexaenoic acid (DHA) are found in cold water fish such as salmon, mackerel, halibut, sardines, tuna, and herring. ALA is found in flaxseeds, flaxseed oil, canola (rapeseed) oil, soybeans, soybean oil, pumpkin seeds, pumpkin seed oil, purslane, perilla seed oil, walnuts, and walnut oil. The health effects of omega-3 fatty acids come mostly from EPA and DHA. ALA from flax and other vegetarian sources needs to be converted in the body to EPA and DHA. Other sources of omega-3 fatty acids include sea life such as krill and algae.

### **Available Forms**

Both EPA and DHA can be taken in the form of fish oil capsules. Flaxseed, flaxseed oil, fish, and krill oils should be kept refrigerated. Whole flaxseeds must be ground within 24 hours of use, so the ingredients stay active. Flaxseeds are also available in ground form in a special mylar package so the components in the flaxseeds stay active. Purchase of omega-3 fatty acid supplements made by established companies should be checked for

contamination from heavy metals such as mercury, lead, and cadmium. Omega-3 fatty acids found in salmon, walnuts and kiwi fruit provide many benefits, such as improving learning and memory and helping to fight against mental disorders like depression and mood disorders, schizophrenia, and dementia. "Omega-3 fatty acids are essential for normal brain function.

### **Dietary Deficiency**

Dietary deficiency of omega-3 fatty acids in humans has been associated with increased risk of several mental disorders, including attention-deficit disorder, dyslexia, dementia, depression, bipolar disorder and schizophrenia. Children who had increased amounts of omega-3 fatty acids performed better in school. Getting omega-3 fatty acids from food rather than from capsule supplements can be more beneficial, providing additional nutrients. Research shows that omega-3 fatty acids reduce inflammation and may help lower risk of chronic diseases such as heart disease, cancer, and arthritis. Omega-3 fatty acids are highly concentrated in the brain and appear to be important for cognitive (brain memory and performance) and behavioral function. In fact, infants who do not get enough omega-3 fatty acids from their mothers during pregnancy are at risk for developing vision and nerve problems. Symptoms of omega-3 fatty acid deficiency include fatigue, poor memory, dry skin, heart problems, mood swings or depression, and poor circulation.

### **Health Benefits**

Omega-3 fatty acids (also known as n-3 fatty acids) are polyunsaturated fatty acids that are essential nutrients for health. Omega-3 fatty acids are needed for numerous normal body functions, such as controlling blood clotting and building cell membranes in the brain. Omega-3 fatty acids are also associated with many health benefits, including protection against heart disease and possibly stroke. New studies are identifying potential benefits for a wide range of conditions including cancer, inflammatory bowel disease, and other autoimmune diseases such as lupus and rheumatoid arthritis.

There are two major types of omega-3 fatty acids in our diets: One type is alpha-linolenic acid (ALA), which is found in some vegetable oils, such as soybean, rapeseed (canola), and flaxseed, and in walnuts. ALA is also found in some green vegetables, such as Brussels sprouts, kale, spinach, and salad greens. The other type, eicosapentaenoic acid (EPA) and docosahexaenoic acid (DHA), is found in fatty fish. The body partially converts ALA to EPA and DHA. Omega-6 fatty acids (also known as n-6 fatty acids) are also polyunsaturated fatty acids that are essential nutrients, meaning that our bodies cannot make them and we must obtain them from food (common sources include safflower, corn, cottonseed, and soybean oils). Omega-6 fatty acids lower LDL cholesterol (the "bad" cholesterol) and reduce inflammation, and they are protective against heart disease. So both omega-6 and omega-3 fatty acids are healthy. Plants and fish that contain omega-3 fats have other good nutrients, such as protein, vitamins and minerals. People who do not eat fish or other foods rich in omega-3 fatty acids should consider taking an omega-3 supplement of 500 mg per day; fish oil is used in supplements, but there are also vegetarian supplements that have ALA. Studies suggest that people who have already had a heart attack may benefit from higher doses of omega-3 supplements (basically, double the 500 mg).

It is important to have the proper ratio of omega-3 and omega-6 (another essential fatty acid) in the diet. The Mediterranean diet, on the other hand, has a healthier balance between omega-3 and omega-6 fatty acids. Many studies have shown that people who follow this diet are less likely to develop heart disease. The Mediterranean diet emphasizes foods rich in omega-3 fatty acids, including whole grains, fresh fruits and vegetables, fish, olive oil, garlic, as well as moderate wine consumption.

### **Importance of Omega-3 Fatty acids**

**High Cholesterol:** People who follow a Mediterranean style diet tend to have higher HDL or "good" cholesterol levels, which help to promote heart health. Inuit Eskimos, who get high amounts of omega-3 fatty acids from eating fatty fish, also tend to have increased HDL cholesterol and decreased triglycerides (fats in the blood). Several studies have shown that fish oil supplements reduce triglyceride levels. Finally, walnuts (which are rich in



alpha linolenic acid or ANA, which converts to omega-3s in the body) have been reported to lower total cholesterol and triglycerides in people with high cholesterol levels.

**High Blood Pressure:** Several clinical studies suggest that diets rich in omega-3 fatty acids lower blood pressure in people with hypertension. An analysis of 17 clinical studies using fish oil supplements found that taking 3 or more grams of fish oil daily may reduce blood pressure in people with untreated hypertension.

**Heart Disease:** The role of omega-3 fatty acids in cardiovascular disease is well established. One of the best ways to help in preventing heart disease is to eat a diet low in saturated fat and to eat foods that are rich in monounsaturated and polyunsaturated fats (including omega-3 fatty acids). Clinical evidence suggests that EPA and DHA (eicosapentaenoic acid and docosahexaenoic acid, the 2 omega-3 fatty acids found in fish oil) help reduce risk factors for heart disease, including high cholesterol and high blood pressure. Fish oil has been shown to lower levels of triglycerides (fats in the blood), and to lower the risk of death, heart attack, stroke, and abnormal heart rhythms in people who have already had a heart attack. Fish oil also appears to help prevent and treat atherosclerosis (hardening of the arteries) by slowing the development of plaque and blood clots, which can clog arteries.

**Diabetes:** People with diabetes often have high triglyceride and low HDL levels. Omega-3 fatty acids from fish oil can help to lower triglycerides and apoproteins (markers of diabetes), and raise HDL, so eating foods or taking fish oil supplements may help people with diabetes.

**Rheumatoid Arthritis:** Most clinical studies examining omega-3 fatty acid supplements for arthritis have focused on rheumatoid arthritis (RA), an autoimmune disease that causes inflammation in the joints. A number of studies have found that fish oil helps to reduce symptoms of RA, including joint pain and morning stiffness. Laboratory studies suggest that diets rich in omega-3 fatty acids (and low in the inflammatory omega-6 fatty acids) may help people with osteoarthritis. An analysis of 17 randomized, controlled clinical trials looked at the pain relieving effects of omega-3 fatty acid supplements in people with RA or joint pain caused by inflammatory bowel disease (IBS) and painful menstruation (dysmenorrhea). The results suggest that omega-3 fatty acids, along with conventional therapies such as NSAIDs, may help to relieve joint pain associated with these conditions.

**Osteoporosis:** Some studies suggest that omega-3 fatty acids may help increase levels of calcium in the body and improve bone strength. Some studies also suggest that people who don't get enough of some essential fatty acids (particularly EPA and gamma-linolenic acid [GLA], an omega-6 fatty acid) are more likely to have bone loss than those with normal levels of these fatty acids.

**Depression:** Several studies show that omega-3 fatty acid intake helps to protect against postpartum depression. Researchers have found that people eating foods with high levels of omega-3s have lower levels of depression. Fish oil also seems to increase the effects of antidepressants and help reduce mood swings. Also, omega-3 fatty acids can help to boost memory.

**Attention Deficit Hyperactivity Disorder (ADHD):** Children with attention deficit/hyperactivity disorder (ADHD) may have low levels of certain essential fatty acids (including EPA and DHA). In a clinical study of nearly 100 boys, those with lower levels of omega-3 fatty acids had more learning and behavioral problems (such as temper tantrums and sleep disturbances) than boys with normal omega-3 fatty acid levels.

**Skin Disorders:** In one clinical study, 13 people with sun sensitivity known as photo dermatitis showed less sensitivity to UV rays after taking fish oil supplements. However, topical sunscreens are much better in protecting the skin from damaging effects of the sun than omega-3 fatty acids. In another study of 40 people with psoriasis, those who took EPA with their prescription medications did better than those treated with the medications alone.



**Macular Degeneration:** A questionnaire given to more than 3,000 people over the age of 49 found that those who ate more fish were less likely to have macular degeneration (a serious age related eye condition that can progress to blindness) than those who ate less fish.

**Menstrual pain:** In one study of 42 women, they had less menstrual pain when they took fish oil supplements than when they took placebo.

**Coloncancer:** Eating foods rich in omega-3 fatty acids seems to reduce the risk of colorectal cancer. For example, Eskimos, who tend to have a high fat diet, but eat significant amounts of fish rich in omega-3 fatty acids, have a low rate of colorectal cancer. Animal studies and laboratory studies have found that omega-3 fatty acids prevent worsening of colon cancer.

**Breast Cancer:** Although not all experts agree, women who eat foods rich in omega-3 fatty acids over many years may be less likely to develop breast cancer. More research is needed to understand the effect that omega-3 fatty acids on the prevention of breast cancer.

**Prostate cancer:** Population based studies of groups of men suggest that a low fat diet including omega-3 fatty acids from fish or fish oil help prevent the development of prostate cancer.

**Improves Lipid Profile:** Omega 3 fats are known to lower the production and secretion of VLDL (very low density lipoprotein) that causes atherosclerosis and development of heart disease.

**Regulates Important Physiological Functions:** Some studies suggest that Omega-3 fats play an important role in the production of prostaglandins which are known to regulate important physiological functions like blood pressure, blood clotting, nerve transmission, allergic responses, etc.

**Protects Against Dementia And Alzheimer's:** Omega 3 fats play a role in protecting neurons in the brain. A diet low in Omega 3s is linked to an increased risk of dementia and Alzheimer's disease.

**Slows Aging:** According to researchers, taking enough omega-3 fatty acid supplements could slow a key biological process linked to ageing.

### **Omega-3 Fatty Acid Supplements**

Supplements should be taken under the direction of a physician. Dosing for fish oil supplements should be based on the amount of EPA and DHA, not on the total amount of fish oil. Supplements vary in the amounts and ratios of EPA and DHA. A common amount of omega-3 fatty acids in fish oil capsules is 0.18 grams (180 mg) of EPA and 0.12 grams (120 mg) of DHA. Different types of fish contain variable amounts of omega-3 fatty acids, and different types of nuts or oil contain variable amounts of ALA. Fish oils contain approximately 9 calories per gram of oil.

There is no established dose for children. Omega-3 fatty acids are used in some infant formulas. Fish oil capsules should not be used in children except under the direction of a health care provider. Children should avoid eating fish that may be high in mercury, such as shark, swordfish, king mackerel, and tilefish. Adult should not take more than 3 grams daily of omega-3 fatty acids from capsules without the supervision of a health care provider, due to an increased risk of bleeding.

### **Precautions**

Omega-3 fatty acids should be used cautiously by people who bruise easily, have a bleeding disorder, or take blood thinning medications including warfarin (Coumadin), clopidogrel (Plavix), or aspirin. High doses of omega-3 fatty acids may increase the risk of bleeding. Fish oil can cause gas, bloating, belching, and diarrhea. People with either diabetes or schizophrenia may lack the ability to convert alpha-linolenic acid (ALA) to

eicosapentaenoic acid (EPA) and docosahexaenoic acid (DHA), the forms more readily used in the body. People with these conditions should be sure to get enough EPA and DHA from their diets. Some fish may contain potentially harmful contaminants, such as heavy metals (including mercury), dioxins, and polychlorinated biphenyls (PCBs). For sport caught fish, the Environmental Protection Agency (EPA) recommends that pregnant or nursing women eat not more than a single 6 ounce meal per week, and young children less than 2 ounces per week. For farm raised, imported, or marine fish, the Food and Drug Administration recommends that pregnant or nursing women and young children avoid eating types with higher levels of mercury (such as mackerel, shark, swordfish, or tilefish), and eat up to 12 ounces per week of other fish types. Fish oil should be purchased from a reputed source in order to reduce risk.

## CONCLUSION

Since many research findings shows that omega-3 Fatty acids have got more health benefits, people should take food rich in omega-3 Fatty acids in balanced manner to safeguard their life and to avoid dreadful diseases.

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