

Omega-3: A Fat Lot of Good

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There may have been more than one good reason for our grannies to eat fish on Fridays. Omega-3 is one of the most widely studied areas of nutrition, with claims of benefits to multiple aspects of health, from AMD to CVD. We look at the main types of Omega-3 and summarise some of the possible ways it can improve health outcomes.



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What is Omega-3?

Often described as 'healthy fats', Omega-3 refers to a family of polyunsaturated fats that are a key component of cell membranes in the body and help the function of cell receptors. They contribute to hormone production and bind to receptors in cells that regulate genetic function. Omega-3 is deemed essential in that the body cannot produce it so it must be obtained through diet or supplementation.

There are eleven types of Omega-3 but the three most referred to are:

- ALA (alpha linolenic acid) which contributes to overall health but is deemed to be of lower importance than other types.
- EPA (eicosapentaenoic acid) and DHA (docosahexaenoic acid) are both deemed to be of most importance to overall health, essential for healthy circulation. ALA can contribute to the production of EPA and DHA in the body but not in amounts enough to be of benefit.

Health Benefits

Although decades of research exists on the health benefits of Omega-3, many areas are inconclusive with much study

still ongoing. Contradictory findings in many of these areas are likely due to the fact that Omega-3 absorption rates vary across people because of age, diet, gender, health, etc. Despite this, most health authorities recommend a weekly intake of Omega-3-containing foods or supplementation to improve overall health.

The most conclusive findings related to Omega-3 intake are related to heart health, anti-inflammatory properties, and depression.

Cholesterol-Lowering: Omega-3 has been shown to lower LDL ("bad cholesterol"), reduce triglyceride levels, and actual increase HDL ("good cholesterol").

Blood Pressure-Lowering: improvement in vascular health by increasing the availability of nitric oxide in the body is another benefit of Omega-3, inducing relaxation of blood vessels and lowering blood pressure.

Heart Disease Prevention: the positive effects of Omega-3 in cholesterol and blood pressure can be assumed to work towards preventing heart disease.

Anti-Inflammatory: Omega-3 is shown to alleviate chronic inflammation, which is linked to obesity, heart disease and certain cancers. They reduce inflammation and oxidative stress and may help prevent the development of many chronic diseases.

Cancer Treatment Efficacy: Supplementation with EPA and DHA has been found to improve neck, head and breast cancer by reducing cancer-related muscle loss and maintaining body weight. It also may improve the effectiveness and tolerance of chemotherapy.

Anti-Depression: EPA has been shown to prevent depression. Diets rich in seafood have also been linked to depression prevention.

Other potential benefits

Less conclusive studies requiring further investigation have highlighted many additional potential benefits of Omega-3, including:

- Preventing allergic diseases in females
- Improving skin health by promoting healing and reducing sunburn response. It also may improve skin conditions like eczema
- Reducing risk of macular degeneration
- Contributing to brain development during pregnancy and infancy
- Reducing children's risk of later development of autoimmune diseases
- Improving health after heart attack
- Lowering menstrual pain
- Reducing risk of sleep apnoea
- Improving neuropathic pain
- Preventing psychosis.



Links between Omega-3 intake have also been posited in:

- Cognitive decline in older people
- ADHD symptoms
- Asthma in children
- Bone health and preventing osteoporosis and arthritis.

An interesting area of current investigation is the link between vitamin B and Omega-3, with some evidence suggesting there is a mutual effect on absorption and benefit in the prevention of cognitive decline. Indeed, much about Omega-3 still remains to be conclusively proven but the potential of a wide range of health benefits is clear.

Sources of Omega-3

ALA is primarily found in plant food. Good sources include:

- Chia seeds
- Walnuts
- Flaxseed.

However, ALA contribution to production of DHA and EPA is minimal, and many sources are high in calories so consumption should be closely monitored.

The best source of EPA and DHA is oily fish. White fish contains some but not enough to meet recommended intake levels. The best sources are:

- Mackerel
- Tuna
- Trout
- Salmon
- Herring
- Fresh Crab
- Whitebait
- Swordfish.

It is widely suggested that modern diets are too low in Omega-3 intake, with too high an intake of other less beneficial polyunsaturated fats. As such, the use of Omega-3 supplements is generally recommended.

How much Omega-3 is required?

The ideal intake of Omega-3 likely varies by age, gender and overall health. International guidelines

vary and take the form of portion recommendations rather than actual amounts of Omega-3. The Irish Heart Foundation advises eating fish twice a week for a healthy heart. One adult portion of salmon contains approximately 1.24 grams of DHA and 0.59 grams of EPA. Generally, daily intake of Omega-3 should not exceed 3 grams. The Association of UK Dieticians gives the following weekly oily fish portion recommendations for overall health:

- 18 months to 3 years – 1-3 tablespoons
- 4 to 4 years – 2-4 tablespoons
- 7-11 years – 4-6 tablespoons
- 12 years to adult – 140g.

While seafood is the most impactful source of Omega-3, there are valid concerns about the sustainability of fishing, as well as relevant cautions about other elements contained in commercial fish products, including mercury. Fish should be purchased from sustainable sources where possible, and caution paid to products like tuna which may contain higher levels of mercury and therefore portions limited. Additionally, those who follow non-fish diets should look for fortified foods, such as eggs and dairy products, as plant-based foods do not contain appropriate

levels of Omega-3. Some supplements derived from algae may be a solution to those who do not eat fish. Supplements should be checked to ensure they equate to roughly two portions of fish per week, that is 450mg EPA and DHA per adult daily dose.

Precautions

There are some mild side-effects associated with Omega-3 supplements, which include gastrointestinal discomfort, bad breath, and headache. It is also believed that excessive Omega-3 can reduce immune system function. There are some potential drug interactions associated with Omega-3 intake so ensure WWHAM protocol is followed when patients and customers request Omega-3 supplements. These possible interactions include:

- Anticoagulants
- Blood pressure medicines
- Contraceptive medicines
- Obesity drugs
- Vitamin E.

Caution should also be paid to additional ingredients in Omega-containing products, especially Vitamin A, which can be harmful in excessive amounts.