



## SUPERFOOD SALMON

- The health benefits of salmon are well documented. It is dubbed as **one of only 14 known 'superfoods'** and the inclusion of salmon in human diet is now even more critical if the current population is to avoid becoming the first generation to have a lower life expectancy than its predecessor.
- While progress has been made globally to reduce infectious diseases—cardiovascular, nervous and autoimmune system diseases are on the increase. And other diet-related problems such as obesity, depression and mental illnesses now rank as an even bigger health issue for European populations.
- Salmon is recognised as a superfood because of its nutrient profile and health-protecting qualities, making it a great way to fuel your body. The superfood status is a result of salmon containing large amounts of Omega-3 fatty acids and being low in saturated fat and calories yet high in protein.
- In addition to cardiovascular benefits, a diet rich in Omega-3 has also been found to assist with easing joint or arthritis pain by decreasing inflammation as well as brain development and function. The human brain is 60 per cent structural fat and in order to function properly needs the right kind of fat (Omega-3s) to make sure that signals are passed quickly and easily between the membranes of the brain cells. Omega-3 cannot be produced naturally by the body and must be obtained from food consumption.
- Compared to other types of seafood containing beneficial Omega-3s, salmon is well above the average recommended intake (2,170mg per 100g compared with oysters at 150mg per 100g). The recommended weekly intake of Omega-3 is 4270mg, so just two portions of salmon (or 40 beef steaks) provides all the human body needs.
- Salmon is also rich in high-quality protein (another essential nutrient to help the body heal after injury, protect bone health and maintain muscle mass), an excellent source of several vitamins (D, B6, B12 needed for energy production, controlling inflammation and protecting heart health) and a good source of Potassium.

---

## OMEGA-3 VS OMEGA-6 – THE FACTS

- Omega-3 and omega-6 are two polyunsaturated fatty acids that play an important role in the functioning of healthy bodies.
- This has earned them the label 'essential fatty acids' or EFAs.
- Despite their health benefits, most people today consume too much omega-6, tipping the delicate balance between these two fatty acids.
- The recommended ratio of omega-6 to omega-3 fatty acids in the diet is 4:1 or less. However, the Western diet has a ratio between 10:1 and 50:1.
- Scientists speculate that a diet consisting of high omega-6 consumption can drive inflammation and may play a role in modern pandemics of chronic diseases, such as heart disease.



- Farmed salmon has three times the total fat of wild salmon, including EFAs like omega-3 and omega-6 fatty acids. While the omega-3 to omega-6 ratio is about three times higher in farmed salmon than wild the total omega-6 in farmed salmon is still too low to cause concern.

## OMEGA-3

Consuming farmed and/or wild salmon leads to a large improvement in omega-3 intake for most people and is often recommended for this purpose.

Omega-3 fatty acids are polyunsaturated fats, a type of fat your body can't make, meaning they must come from your diet. These fats are referred to as "essential fats", meaning that they are required for biological processes. According to the Food and Nutrition Board of the US Institute of Medicine, the best source of omega-3 salmon.

The World Health Organisation (WHO) recommends eating at least two portions of oily fish per week, which is rich in the omega-3s Eicosapentaenoic acid (EPA) and Docosahexaenoic acid (DHA). EPA produce chemicals called eicosanoids, which help reduce inflammation and can also reduce symptoms of depression, while DHA is extremely important for normal brain development and function.

Omega-3 fats also have several other important functions, including:

- **Improving heart health:** omega-3 fatty acids can increase "good" HDL cholesterol. They can also reduce triglycerides, blood pressure and the formation of arterial plaques.
- **Supporting mental health:** having omega-3s can reduce symptoms of depression, schizophrenia and bipolar disorder. It can also reduce the risk of psychotic disorders for those who are at risk.
- **Supporting infant brain development:** omega-3s are extremely important for brain development in babies.
- **Fighting inflammation:** omega-3 fats are anti-inflammatory, meaning that they can reduce the inflammation in your body that can contribute to several chronic diseases.
- **Preventing dementia:** people who eat more fish, which is high in omega-3 fats, tend to have a slower decline in brain function in old age. Omega-3s may also help improve memory in older people (25Trusted Source, 26).
- **Promoting bone health:** people with higher omega-3 intake and blood levels tend to have better bone mineral density.
- **Preventing asthma:** omega-3 intake can help reduce symptoms of asthma, especially in early life.

## OMEGA-6

Like omega-3 fatty acids, omega-6 fatty acids are polyunsaturated fatty acids. Omega-6 fatty acids are also considered essential, so you need to obtain them from your diet. Omega-6 fatty acids are primarily used for energy. Generally, the modern Western diet contains far more omega-6 fatty acids than needed to maintain a healthy balance.

Therefore, although omega-6 fats are essential in the right quantities, most people in the developed world should aim to reduce their omega-6 intake. Nevertheless, some omega-6 fatty acids have shown benefits in treating symptoms of chronic disease.

Gamma-linolenic acid (GLA) is an omega-6 fatty acid found in certain oils, such as evening primrose oil and borage oil. When consumed, much of it is converted to another fatty acid called dihomo-gamma-linolenic acid (DGLA). One study also showed that taking a high dose of GLA supplements significantly reduced several symptoms of rheumatoid arthritis.

Another interesting study found that taking GLA supplements in addition to a breast cancer drug was more effective at treating breast cancer than the drug alone.



Conjugated linoleic acid (CLA) is another form of omega-6 fat that has some health benefits. For example, one large study found that taking 3.2 grams of CLA supplements per day effectively reduced body fat mass in humans.

Though farmed salmon is much higher in omega-6 fatty acids than wild salmon, the total is too low to cause concern and doesn't compare to the other health benefits of eating salmon.

## INDUSTRY RESEARCH INTO SUSTAINABLE FISH FEED AND OMEGA-3 INTAKE

In 2019, Norwegian and Australian researchers conducted a study into the use of DHA omega-3 canola oil (DHA-CA), genetically modified with algal genes, as a replacement for fish oil in diets of Atlantic salmon fingerlings. The research was done in two feeding trials in Australia and Norway where two dietary levels of DHA-CA were compared with two dietary levels of fish oil at two water temperatures.

The research found that salmon fed DHA-CA diets had approximately the same EPA+DHA content in whole body as salmon fed fish oil diets. Gene expression, lipid composition and oxidative stress-related enzyme activities showed only minor differences between the dietary groups, and the effects were mostly a result of dietary oil level, rather than the oil source.

Researchers also found that the levels of phytosterols, vitamin E and minerals in the n-3 modified canola oil fall within the natural variation of commercial canola oils and levels of undesirable compounds were undetectable. Researchers conclude that the n-3-rich modified canola oil (DHA-CA) is as safe as other commercial canola oils and is suitable as an alternative oil source in salmon diets.

While this research demonstrates the possibilities of moving away from fish oil as a feed supplement, Tasmania's GMO free status precludes the use of GMO supplements in fish feed. One of Huon's feed suppliers, Skretting, is currently undertaking research into the viability of insect meal as a protein replacement in salmon feed. This is just one way the industry is working towards continual sustainable development moving forward.

## REFERENCES:

- *CSIRO Marine Research – Omega Oils in Australian Seafood and NHMRC Recommended Dietary Intakes* <https://www.nhmrc.gov.au/sites/default/files/images/nutrient-reference-dietary-intakes.pdf>
- <http://www.aquafeed.com/af-article/9262/Omega3-canola-oil-a-safe-dietary-source-of-DHA/>
- <https://www.skretting.com/en/sustainability/ingredients/novel-raw-materials/using-insect-meals-in-aquafeeds/>

