



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 (commonly called omega-3 DHA) 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.
- 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.
- The Australian Heart Foundation recommends people consume 250-500mg of omega-3 daily. A 100g portion of fresh Huon Salmon contains 1,400mg of omega-3 – as per the Nutritional Information Panels. By way of comparison, 6 oysters contain 370mg of omega-3, while one serving of grass fed sirloin steak contains 60mg (Source – The Heart Foundation)
- Pregnant women are recommended to eat oily fresh fish, including salmon, because of the levels of omega-3 DHA contained. Consuming smoked salmon is not recommended for pregnant women.

NUTRITIONAL PROFILE OF HUON SALMON

- Food Standards Australia New Zealand (FSANZ) requires all packaged food to include a NIP – Nutritional Information Panel and food producers are regularly audited for compliance. Non Australian or NZ food producers are not held to the same regulations. (<https://www.foodstandards.gov.au/code/Pages/default.aspx>).
- Schedule 4 of the code relates to the requirements Huon must undertake to validate nutritional claims on our packaging - our products' nutritional information is tested annually by an external NATA accredited laboratory, and every product includes Nutritional Information Panels (NIP) on the packaging.



- To ensure consistency and accuracy, samples sent for testing include a composite of 5 samples (for example: 5 packs of Huon Skin On 280g MAP to be combined into one testing sample).

FAT PROFILE

- There are four main types of fats – two are healthy (monounsaturated and polyunsaturated ie omega-3 and omega-6 found in salmon) and two are unhealthy (saturated and trans fats).
- Due to the natural seasonal variation of salmon, it is common to see variations in fat values, which is why Huon conducts testing on multiple samples throughout the year, to collect an up-to-date and representative data set. Due to the known variation in fat throughout a whole fish, the global industry has adopted what is known as the NQC (Norwegian Quality Cut); an area of the fish that provides an average of the whole fillet. Salmon contain more fat around certain areas (ie head) which is why the cut of the flesh being tested is critically important.
- Plus, due to the natural variation of the fish, Huon use an average of the past three years nutritional testing results for our nutritional information panels (NIP) on the labels of our products. The data in the nutrition panel also states that all results are 'Averages' and not absolute values.
- The health benefits long associated with the fatty acids found in salmon relate to the polyunsaturated fats (aka "healthy fats"). Therefore, when comparing total fat content, it is important to appreciate the relative presence and proportions of the different kinds of fats present, as some are more harmful to health, whereas others can offer health benefits.
- Reviewing total fat alone is not a true indicator of the overall nutritional profile in any food.

ALLERGENS

- All Huon raw products are free from all declared allergens other than fish.
- At our processing sites, we use a range of allergens as part of marinades and pre-mix ingredients. In all cases these are stored and applied (to the product) in rooms that are physically separated from processing areas, using dedicated staff and equipment.
- Our processing sites are analysed against the Voluntary Incidental Trace Allergen Labelling (VITAL) program. The VITAL program was developed by the Australian Allergen Bureau to provide industry guidance and resources to assist with food allergen management, labelling, identifying potential allergens in our product, and determining whether and how they should be declared.
- VITAL allows our sites to identify and assess the potential for and impact of allergen cross contact and then provides advice on whether we need to apply appropriate precautionary allergen labelling on our products. The VITAL Program produces a 'labelling outcome' that summarises the food allergens present in a food due to intentional inclusion (as part of a recipe) and where food allergens, present, due to cross contact, should be included (or not) on the label in the form of the precautionary statement '*May be present: allergen x, allergen y.etc*'.
- Our VITAL assessments all conclude there is no risk of cross contamination for any raw product produced – as a result there is no need to add cautionary statements to our labelling warning consumers of the potential for cross contamination.

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. Seafood is the best source of omega-3 fatty acids. In general, the level of omega-3 has declined in farmed salmon, but from a high of 2000mg per 100g serve to around 800mg/100g serve (CSIRO).



- 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 (it is not an unhealthy level). Plus, omega-3 content in farmed salmon is still around three-four times more than the average for 300 species of wild Australian fish (average wild fish contains 250mg/100g) (2014 research by CSIRO - <https://publications.csiro.au/publications/publication/PIcsiro:EP1312974>).
- In farmed salmon, the ratio between omega-3 and omega-6 is similar to grass-fed Australian lamb. The omega-6 rich oils and foods that are viewed as less healthy are those with totally different omega-6:omega-3 ratios (ie the omega-6 is multiple times higher than the level of omega-3)

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.

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 canola oil fed fish, fell within the natural variation of commercial canola oils and levels of undesirable compounds were undetectable. Researchers concluded that the canola oil (DHA-CA) was 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.

But a word of caution: there are three main types of Omega 3 oils; ALA, EPA and DHA. All three are readily available from animal-based sources, but only the former is available from plant-based sources. The latter two can be bio-converted from the former by the human body, but only at minuscule rates; only 1-10% of ALA converts to EPA and 0.5-5% to DHA; you would need to eat a LARGE amount of plant-based ALA to get the equivalent amounts of EPA and DHA.

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>
- The Heart Foundation (www.heartfoundation.org.au) – search for “salmon” has numerous statements on the health benefits of eating salmon.
- <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/>
- [This is the healthiest fish to eat, according to experts - CNN](#)
- [Food Standards Australia New Zealand www.foodstandards.gov.au](http://www.foodstandards.gov.au)

