

Introduction

In a series of guides covering topical issues affecting the UK seafood industry, Seafish looks at the Omega-3 health claims for seafood, guidelines on consumption and the legislative framework for making claims.

What are Omega-3 oils?

Omega-3 oils are a type of polyunsaturated fat and the healthiest fat you can eat. There are three types of fat in a typical diet: saturated fat which comes mainly from animal sources and includes cheese, butter and red meat; mono-unsaturated fat which is found in olive oil; and polyunsaturated fat, which is found in seafood, nuts, meat and many edible vegetable oils, particularly sunflower and corn oil.

There two most significant types of polyunsaturated fat (also referred to as polyunsaturated fatty acids (PUFA) or essential fatty acids) are Omega-3 and Omega-6 fatty acids. These two are further divided into short-chain (18 carbons and less) and long-chain (20 or more carbons). The body is

unable to naturally produce either of these so they have to be obtained from the foods we eat.

Since the mid-1950s the UK national intake of polyunsaturates has changed dramatically. Intake of Omega-6 polyunsaturates from seed oils (sunflower oil margarine is a good example) and other sources has doubled. Over the same period the consumption of Omega-3 has halved and we are eating less seafood and dark green leafy vegetables. There have been changes to the diets of the animals from which we obtain meat, milk and eggs which has further reduced the Omega-3 supply in our diet. As a result there is likely to be plenty of Omega-6 in the average diet, but less than half the Omega-3 we need.

Sources of Omega-3 and Omega-6 fatty acids

Long chain PUFAs	Name	Abbr	Food source
Omega-3	Alpha-linolenic acid	ALA	Walnuts, flaxseed oil, soybean and canola oil
	Eicosapentaenoic acid	EPA	Oil-rich fish such as herring, salmon, mackerel, tuna and fish oils
	Docosahexaenoic acid	DHA	Oil-rich fish such as herring, salmon, mackerel, tuna, fish oils, algal oils
Omega-6	Linolenic acid	LA	Corn, soybean, cottonseed and sunflower oils
	Gamma-linolenic acid	GLA	Evening primrose oil, borage oil and blackcurrant seed oil
	Arachidonic acid	ARA	Meat, poultry and eggs

Source: <http://www.ific.org/publications/factsheets/omega3fs.cfm>

The right balance

It is the right balance of Omega-3 and Omega-6 that is the key. Medical experts recommend that Omega-3:Omega-6 are present in the diet at an optimal ratio of around 1:3 to 1:5. Currently in the developed world the ratio is nearer 1:10 to 1:20.

To correct this imbalance we need to increase intake of Omega-3 fatty acids and decrease the intake of Omega-6 fatty acids. In doing so it is also important to distinguish between the different types of Omega-3. It is the long chain Omega-3s, mostly found in the marine environment, which provide the real benefits. Long chain Omega-3s consist of two key substances: docosahexaenoic acid (DHA), critical in the development of the human brain, for eye and vision maintenance and brain function in all age groups; and eicosapentaenoic acid (EPA), vital for heart and joint health.

The second type of Omega-3 is the short chain alpha linolenic acid (ALA), which is found in some plants. The human body can in theory convert the short chain ALA to the more beneficial long chain Omega-3s (DHA and EPA) but conversion rates vary from individual to individual. On average there is around a 5% conversion from ALA to EPA, and less than 0.5% from ALA to DHA, so in reality vegetable sources of Omega-3 are not good at raising body levels of the long chain forms. The message is consumers should get their Omega-3 from seafood.

The best sources of Omega-3

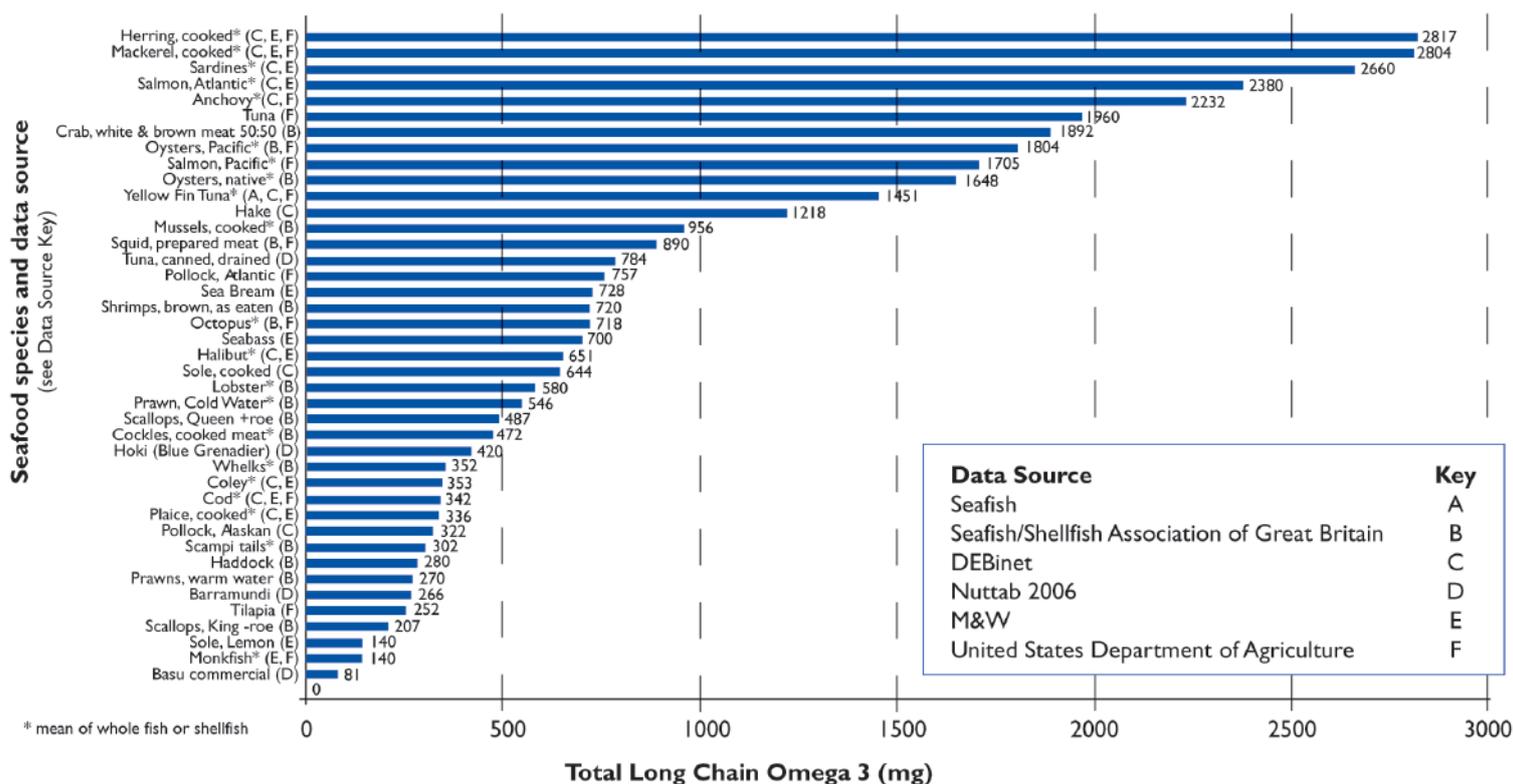
Experts agree that we need more Omega-3 for good health however significant amounts of Omega-3 are found in a very limited number of foods. Seafood and fish oils are the only nutritionally significant source of DHA and the major dietary source for EPA. Fish and shellfish are overwhelmingly the major source of long chain Omega-3.

Data for the UK show that more than 80% of natural EPA and DHA available in the human diets comes directly from fish and seafood.¹

There are now some other sources of long chain Omega-3. New food and beverage products enriched with long chain Omega-3 oils have emerged such as milk-based

products, juices, table spreads, salad dressings, sauces, breakfast cereals, baked beans, infant formulas and baby foods. In addition, adding long chain Omega-3 oils to animal feed (in the form of fish oil) increases the amount of Omega-3 in eggs, beef and pork.

Omega 3 Values in Seafood per 140g Serving



Source: Sea Fish Industry Authority

Eating fish versus fish oil supplements

Experts agree that oil-rich fish is good for us but opinion is divided over whether fish oil supplements could be the answer. There have been a lot of clinical trials which have involved supplements. A recent US study *Omega-3 Polyunsaturated Fatty Acids and Cardiovascular Diseases*² (published in the Journal of the American College of Cardiology, August 2009) recommended healthy people have 500 mg of Omega-3 fish oil

supplements a day, but those with heart disease or heart failure should take at least 800 – 1000 mg.

Fish oil supplements are convenient but unfortunately there is a wide variability in composition and strength, and not many products sold on the market today contain DHA in high levels. The benefits of eating whole foods such as fish significantly outweigh those of consuming a supplement. In an article which has been directly

verified by the British Heart Foundation (BHF), Victoria Taylor, senior dietician, responded: "Eating oil-rich fish remains the best way to obtain these oils for the general population. This is because 'real' food provides a greater array of nutrients than a pill, and some experts believe these are more easily absorbed than the ones in supplements. The BHF recommends eating two or three portions of oil-rich fish a week over taking a capsule."

Expert guidance

On September 8, 2004, the U.S. Food and Drug Administration gave 'qualified health claim' status to eicosapentaenoic acid (EPA) and docosahexaenoic acid (DHA) Omega-3 fatty acids, stating that 'supportive but not conclusive research shows that consumption of EPA and DHA (Omega-3) fatty acids may reduce the risk of coronary heart disease.'

The American Heart Association (AHA) states DHA and EPA should be obtained 'preferably from oily fish', and this is endorsed by the American Heart Foundation. 'We recommend eating fish (preferably fatty fish) at least two times a week.' The UK Food Standards Agency recommends eating two portions of fish a week, one of which should be oily. A typical portion is about 140 g of fish. NICE, the National Institute for Clinical Excellence, has recommended that anyone recovering from a heart attack should be prescribed a daily dose of Omega-3.

Recommended levels of Omega-3

For many countries the official recommended daily adult intake of EPA and DHA is 300 to 650 mg/day. In the UK, it is 450 mg/day. The recommended levels will increase for those with known coronary heart disease and those patients with hypertriglyceridemia.

The UK target adult intake of 450 mg/day of DHA and EPA can be achieved by consuming two portions of fish per week, one of which is oil-rich; or by taking a tablespoon of

standard liquid fish oil weekly; or by taking 1 to 2 capsules of standard over-the-counter fish oil per day. A 140 g portion of oil-rich fish provides up to 2,500 mg of Omega-3 – much more than the amount you find in many fish oil supplements.

The target can also be achieved by eating foods fortified with Omega-3. However it would take 10 glasses of fortified milk or three cans of beans per day to achieve the target intake.³

	Recommended DHA and EPA intake ^{1, 4, 5}	Estimated actual DHA and EPA intake ^{1, 4, 5}
Eurodiet, 2000	200 mg/day	
Northern Europe		600 mg/day
Southern Europe		480 mg/day
Mid Europe		250 mg/day
UK (SACN, 2004)	450 mg/day	244 mg/day, of which 199 mg/day from fish
The Netherlands (GR 2001 and 2006)	450 mg/day	Men 100 mg/day Women 80 mg/day
Nordic Countries (NNR, 2004)	450 mg/day	Men 200 mg/day Women 150 mg/day
France (AFSSA 2001)		
Adult men	500 mg/day	420 mg/day
Adult women	400 mg/day	350 mg/day
Austria		Men 280 mg/day Women 251 mg/day
Germany (two studies)		
Study 1		Men 290 mg/day Women 210 mg/day
Study 2		Men 340 mg/day Women 220 mg/day
North America		200 mg/day
Japan		900 mg/day

REFERENCES

- <http://www.nutrition.org.uk/upload/R%20Gibbs.pdf>
- <http://content.onlinejacc.org/cgi/content/abstract/54/7/585>
- <http://www.ifo.net/intranet/content/archivos/75.pdf>
- http://www.efsa.europa.eu/EFSA/efsa_locale-1178620753812_1211902671518.htm
- http://www.efsa.europa.eu/cs/BlobServer/Scientific_Opinion/nda_op_ej253_nutrition%20claims%20for%20fats_en_revised2,3.pdf?ssbinary=true

Health benefits of Omega-3

The health benefits of eating foods rich in Omega-3, such as fish and shellfish, are well documented:

Disease or health condition	Strong evidence of significant health benefits	Promising preliminary results	Possible health benefits (require more substantiation)
Coronary heart disease	✓		
High blood pressure	✓		
Irregular heart beat (arrhythmia)	✓		
Diabetes	✓		
Cancer			
• Bowel cancer		✓	
• Laryngeal cancer			✓
• Pancreatic cancer			✓
Asthma		✓	
Rheumatoid arthritis	✓		
Crohn's disease		✓	
Central nervous system			
• Neural development		✓	
• Memory			✓
Depression			✓

Source: 'What's so healthy about Seafood?' Australian Government Fisheries Research and Development Corporation

Transition period for Omega-3 health claims

Whilst a lot has been written on this topic there is still confusion about Omega-3 health benefit claims. With new regulations being discussed in Europe, it is important to be aware of how messages must be communicated without overstepping the line.

Q. What legislation do I need to be aware of?

The European Nutrition and Health Claims Regulation EC 1924/2006 (NHCR), which came into force on 1 July 2007, controls any nutrition, health and disease reduction claims made about a food. This has resulted in a change to the legal requirement for making claims.

Q. What is the change to the legal requirement?

All claims must now be approved under the NHCR but that will take time. So health claims made on products before 1 July 2007 such as 'High in Omega-3' or 'Rich in Omega-3', can continue to be used until 19 January 2010, assuming they comply with existing food law.

Q. What is happening during this transitional period?

The Commission is assessing all health claims and is expected to publish its full definitive list of approved health claims in 2010. Applications for inclusion onto this list must be submitted to the FSA who will pass them to the Commission for consideration. The FSA has published the list for submission onto the approved list. This list includes a number of Omega-3 claims see <http://www.food.gov.uk/foodlabelling/ull/claims>

Q. What kinds of claims can be made for a food product?

Claims should not be misleading and generally there are three types of claim:

- A food claim is a claim that expresses the composition, quality, quantity or origin of a food product.
- A nutrition (nutrient content) claim is a claim that characterises the energy value of the food, or the amount of a nutrient contained in a food. It provides a quick and easy way to identify foods with specific nutritional features of interest such as 'High in Omega-3'. Omega-3 content claims are likely to be nutrition claims. Government messages such as '2 a week' are not considered to be health or nutrition claims and are not included in this Regulation.
- A health claim is any representation in labelling or advertising that states, suggests, or implies that a relationship exists between consumption of a food or an ingredient in the food and a person's health.

Q. What claims for Omega-3 have been made on products?

Prior to the NHCR coming into force health claims were approved by the Joint Health Claims Initiative (JHCI). The approved JHCI Omega-3 health claims is *Eating 3 g weekly, or 0.45 g daily, long chain Omega-3 polyunsaturated fatty acids, as part of a healthy lifestyle, helps maintain heart health.* <http://www.jhci.org.uk/approv/omega.htm>

Q. What are the requirements to make an Omega-3 nutrition claim?

One of the requirements of the NHCR for making a nutrition claim is that the food contains significant amounts of the named nutrient to be a benefit to health. What is deemed to be a significant amount is the amount that can be expected to produce the desired effect taking into account what quantities will be eaten.

Q. What is the basis for 'Source of Omega-3' and 'High in Omega-3 claims'?

As of July 2009 the annex to the NHCR proposal references 'Source of Omega-3' and 'High in Omega-3' claims. This has created some debate and further evidence is being sourced.

Information sources

<http://www.fda.gov>
<http://www.americanheart.org>
<http://www.eatwell.gov.uk>
<http://www.nice.org.uk>
<http://www.ific.org>
<http://www.bhf.org.uk>
<http://www.richinomega3.com>
<http://www.omega-3centre.com>

For further information visit the Seafish Omega-3 health benefit claims page at:

<http://www.seafish.org/b2b/subject.asp?p=350>

Seafish: who we are

Seafish, the authority on seafood, was founded in 1981 by an act of parliament and supports the seafood industry for a sustainable, profitable future. Our services range

from research and development, economic consulting, market research and training through to account management and legislative advice for the seafood industry.

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www.seafish.org
<http://sin.seafish.org>