

Oily fish – healthy, but unsustainable?

Dietary advice is still to eat two portions of fish a week, one of which should be oily. However, as fish stocks continue to dwindle, ecologically-aware patients might not be keen on adding to the burden. Courtney Van de Weyer, who runs the Food and Mental Health Project at food and farming alliance Sustain, addresses the issues.

DESPITE THE RECENT study published in the BMJ contending that omega-3 is not necessarily the answer to good health – accompanied by a flurry of strangely triumphant newspaper headlines – there have been no changes in official recommendations on oily fish consumption. The Food Standards Agency's advice remains to eat at least two portions of fish per week, one of which should be oily. And were it not for the presence of mercury and PCB contamination in fish, the recommendation would almost certainly be increased.

The exhortation to eat more oily fish is everywhere – from Food Standards Agency statements to the pages of *Glamour*, from the British Dietetic Association's Food Facts to the websites of nutritional therapists. Some

proponents of oily fish consumption are so enthusiastic that people could be forgiven for thinking it is the answer to complete well being. Everything from a lower risk of heart disease to healthy joints to improved concentration in children has been claimed to flow from its regular inclusion in the diet.

Although oily fish are a good source of protein and certain vitamins and minerals, the real reason why they are so heavily endorsed is because they are an excellent source of the long-chain omega-3 fatty acids, specifically docosahexaenoic acid (DHA) and eicosahexaenoic acid (EPA). The human body appears to benefit more from eating these long-chain omega-3s than it does from eating the shorter-chain omega-3s (alpha linolenic acid or ALA), which are found in plants. And, although it is possible for the body to convert short chain to long chain, it is generally thought to be inefficient – as little as two per cent might be elongated. As such, animals that have already done the conversion work are generally preferred sources.

Of course, vegetarians beg to differ that an animal-based source of omega-3 is necessary. Vegetarians and vegans may have lower tissue concentrations of long-chain omega-3 in their bodies, but they are widely considered to be healthier than meat eaters. Clearly, as no dietitian needs reminding, one nutrient is not the panacea for good health.

Omega-3 for hearts and minds?

Still, a health claim for omega-3 has been approved, following a wealth of research demonstrating its benefits for heart health. And there are an increasing number of studies which are also demonstrating the benefits of omega-3 for other conditions. The issue perhaps getting the most attention currently is its role in improving mental health and behaviour. A number of studies have researched the link between intakes of omega-3 and mental well being – including conditions such as unipolar depression, bipolar depression, post-partum depression, seasonal affective disorder, schizophrenia, attention deficit hyperactivity disorder (ADHD), Alzheimer's, dyslexia, dyspraxia and – the darling of the headline writer – children's general behaviour and academic attainment¹.

To fulfil the standards of good scientific research, using a randomised double-blind controlled trial, most of the research has been and is being carried out using omega-3 supplements. It's pretty hard to disguise that someone is eating mackerel or a tuna steak. However, there have been a number of studies which have compared rates of



fish intake with certain conditions, including the range of depressive disorders, schizophrenia and Alzheimer's.

The use of omega-3 supplements in research (particularly the very high doses tested) – as well as the desire for a quick fix and the notorious difficulty in changing eating habits – has led those seeking the benefits of omega-3 to get it from a daily pill. Obviously, it is preferable for people to get nutrients from food, where they exist in their natural state and in combination with a wealth of other micronutrients – many of which are unknown or under-studied.

But, is this necessarily the case for oily fish? Is it actually preferable for the population to get their omega-3 from fish? Stark problems in the sustainability of the ocean's fish stocks raise this tricky question.

Sustainability? What sustainability?

Sustainability in the seas is a worryingly under-recognised and under-discussed topic, both generally and in promoting the health benefits derived from oily fish and omega-3. Discussing the issue with health professionals, including dietitians and others promoting oily fish consumption, will more often than not draw a blank look. To many, it is a non-issue.

If only that were the case. The issue of fish stock sustainability is one of the most serious issues facing the world today. It is not alarmist, nor inaccurate, to say simply that the world is running out of fish². And anyone who eats fish – or recommends that others eat it – must be aware of that fact.

Exhausted seas

The UN's Food and Agricultural Organisation (FAO) has estimated that 75% of the world's fisheries are fully exploited, over exploited or significantly depleted. However, some working on the issue have commented that this is likely to be a conservative estimate. The oceans are not an inexhaustible source of fish – despite growing fishing fleets and improvements to technology, global fish catches have been decreasing since 1988. Moreover, the fish now being caught are smaller and younger than those caught fifty years ago – meaning fewer and fewer live long enough to reproduce and replenish the population.

The rise of the commercial fishing industry has led to a shocking degree of destruction in the world's oceans. Not even pollution can match the level of harm that large-scale fishing inflicts – in fact, it has been calculated to be 100,000 times more damaging than oil or gas exploration³.

Apart from the unsustainable depletion of popular species for our dinner plates, modern fishing also affects species that it is not even trying to catch. The fault lies in the methods of industrial fishing fleets – huge nets trawling behind boats scoop up everything in their paths. This not only includes other species of fish, but also dolphins, sea turtles, corals, and all manner of plant life. Trawling is so destructive that it has been estimated that 16 pounds of marine life are killed to produce



one pound of saleable fish⁴. A good analogy of the difference between traditional and modern methods of fishing would be a switch from hunting deer with spears to clear-cutting an entire forest for a few stags⁵.

Unfortunately, "by-catches", as unintentionally caught fish are called, are rarely put to good use – they are more likely thrown over the side. In fact, roughly a third of what is caught at sea is thrown back dead. That is 27 million tonnes every year worldwide⁶.

It is not overly dramatic to say that the consequences of overfishing are potentially catastrophic, going far beyond the loss of our favourite recipes. One prominent researcher put it: "[Fish stock] depletion not only threatens the future of these fish and the fishers that depend on them, it could also bring about a complete reorganisation of ocean ecosystems, with unknown global consequences."⁷

The false hope of farmed fish

Despite the hopes of its pioneers, the answer to declining fish stocks does not lie with farmed fish. Apart from the very serious environmental hazards caused by aquaculture's use of pesticides and antibiotics, as well as the discharge of vast amounts of sewage, the rise of fish farming increases the pressure on fish stocks.

Farmed fish need to eat. And what carnivorous farmed

References

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- 2 Royal Commission on Environmental Pollution. *Turning the Tide: Addressing the impact of fisheries on the marine environment*. (London: HMSO, 2004)
- 3 Charles Clover, *The End of the Line: How Overfishing is Changing the World and What We Eat* (London: Ebury Press: 2004)
- 4 Clover, *The End of the Line*
- 5 Benjamin Wielgosz, *Like shooting fish in a barrel: the collapse of the world fisheries in the 21st century and what we can do to prevent it from happening* (London: Sustain, 2005)
- 6 Clover, *The End of the Line*
- 7 Ransom A Myers and Boris Worm, "Rapid worldwide depletion of predatory fish communities", *Nature* 423, 280–283 (2003)
- 8 John Humphries, *The Great Food Gamble: A Devastating Indictment of What We Are Doing to Our Food and How it Affects Our Health* (London: Hodder and Staughton, 2001).
- 9 Humphries, *The Great Food Gamble*

fish are fed are other ground-up fish – fish usually taken from the wild. Shockingly, one pound of saleable farmed salmon requires two to three pounds of other fish for its feed⁸. Hardly an answer to overfishing.

Moreover, farmed oily fish may not even deliver the benefits promised. Despite the use of ground-up fish in farmed fish feed, it is also normally supplemented with soya, wheat, ash and poultry by-products⁹. These altered diets, accompanied by confinement and overfeeding, mean that farmed fish have different nutritional profiles than wild fish – including fatter flesh and, vitally, lower ratios of omega-3.

So, what to recommend?

The information about declining fish stocks can be overwhelming. However there is plenty that an individual can do. To begin with, those who advise others to eat more oily fish need to start qualifying their advice to take into account sustainability issues. So, instead of the simple “eat more oily fish”, advice should be changed to “eat more oily fish from sustainable sources”.

This is perfectly possible. The Marine Stewardship Council (MSC) is an independent body that was set up to certify fisheries around the world as sustainable. To be MSC-certified, a fishery must meet its strict guidelines on management and stock recovery – choosing fish labelled as MSC-certified is a good way of encouraging sustainability. Moreover, a number of guides clearly set out which fish to eat and which fish to avoid – for example The Good Fish Guide from the Marine Conservation Society (www.fishonline.org).

For example, most tuna is listed as “Critically Endangered” and should be avoided. However, omega-3 rich mackerel from the MSC-certified fishery off Cornwall can be conscientiously eaten and recommended.

In a way, the advice to eat oily fish does go some way to protecting some fish stocks, if only inadvertently. Some

of the most endangered fish species are not oily, such as the favourite of the fish and chip shop, cod. Although it may seem counterintuitive, one of the most helpful changes in nutritional advice would be to recommend only oily fish. Non-oily fish has almost no nutritional advantages that cannot be obtained from a wide range of other low fat sources of protein. There is no nutritional point in recommending that people eat white fish, and it is indefensible if it means that severely threatened species are consumed.

Supplements are not a saviour

It can be easily forgotten that popping fish oil pills raises the same problems as eating oily fish. It may seem obvious, but it needs stating – fish oil comes from fish. The recent talk of supplementing all of the nation’s school children with fish oil is highly worrying from a sustainability point of view. Although many of the species that provide the oil for supplements are not necessarily in trouble themselves (supplements tend to use pelagic fish, which are quick at reproducing), they are ecologically necessary, for example providing food for other species or acting as natural ocean filters.

However, one interesting possible solution has recently been developed. A company has just announced that it has been able to derive long-chain omega-3 from the much more sustainable source of algae, and is now producing supplements of EPA and DHA. The product is very new, but it will be interesting to see whether these supplements deliver the same benefits.

Promoting less omega-6?

One of the little discussed aspects of the benefits of omega-3 is the effect of another essential fatty acid, omega-6. Because of the way that omega-3 and omega-6 appear in the body, as well as the effect that the presence of one has on the other, the generally accepted wisdom is that dietary intake of the two should be approximately equal.

However, due mostly to the rise of processed foods and their reliance on vegetable oils, this balance has been dramatically altered in the modern diet. It has been estimated that as recently as the beginning of the last century, the average ratio of omega-6 to omega-3 in the diet was 2:1. Currently, estimates of the modern diet range from 15:1 to 20:1.

As such, a number of researchers have started to question whether we really need to eat ever-increasing amounts of omega-3. Rather, would it not be better to decrease the level of omega-6 in the diet? Not only might this lower our need for omega-3 overall, but because omega-6 appears to interfere with the conversion of short-chain omega-3 into long-chain versions, it might further reduce the need for animal-based (i.e. fish) sources.

The jury is still out on this suggestion. However, perhaps we will soon see a switch from advice to “eat more oily fish” to campaigns to “eat less omega-6”.

It may not be as snappy, but the fish would be thankful.

