Omega 3 and Salmon – the Young's view

Introduction

Since salmon is one of the UK's most popular and readily available oil-rich fish species, this document reviews the key understandings about Omega 3 in relation to this fish. It also summarises current scientific data relating to differences between wild salmon and farmed.

Omega 3 – key features in relation to health

In terms of human health, the most important omega-3 long-chain 'fatty acids' are EPA (eicosopentanoic acid) and DHA (docosahexaenoic acid). In dietary terms, these oils can only really be derived from marine sources. When talking about Omega 3's we are therefore referring only to EPA and DHA.

The significant health benefits of Omega 3 are now widely recognised by the scientific and nutritional community. The earliest anecdotal evidence for their benefits came from observations of the long life and virtual absence of heart disease observed amongst peoples with a high-fish diet such as Danish, Inuit and many Mediterranean races.

The initial research relating to Omega 3 related mainly to benefits in combating heart disease. However, more than 30 studies so far have demonstrated that Omega 3 can make a vital dietary contribution at every stage of human life.

A summary of three key areas of major health benefit might be (and there are others):

- Heart health - In October 2003, the Joint Health Claims Initiative (JHCI) approved the claim that increased consumption of Omega 3 fatty acids from seafood helps heart health. The extent of the reduction of risk from coronary heart disease seems greatest in those people with the highest risk.
- Autoimmune diseases - fish oils are believed therapeutic for autoimmune disease (lupus and certain kidney disorder), Crohn's disease and inflammatory skin diseases such as eczema and psoriasis.
- Brain and mind - studies by John Stein, professor of neurophysiology at Oxford (and brother of Rick) have suggested that Omega 3 fish oils are good for the brain, in the treatment of dyslexia and other disorders such as schizophrenia and depression. In particular this has implications for improving the brain development and concentration of the unborn, children and young people.

Recommended intake of Omega 3

For general good health, the Food Standards Agency recommends that everyone should eat a minimum of two portions of fish per week – one of which should be oily (a portion is about 140g).

The FSA also describes recommended intake of EPA/DHA as 3g per person per week.

For heart disease prevention, three oil-rich fish meals per week are recommended, except for pregnant or breastfeeding women (owing to the low but recognised potential risk of the presence of environmental pollution from dioxins and PCB's).

It should be noted that for nutritional reasons it is preferable that the intake of Omega 3 be achieved by eating fresh or frozen fish rather than supplements in capsule or tablet form. This is because of the wider benefits of eating fish and shellfish, particularly as a good source of vitamins A, B12 and D plus calcium and other nutrients such as selenium, phosphorus, zinc and iodine.

Omega 3 in salmon

Recent work by Young's and Macrae has looked at the levels of omega 3 fatty acids in different types of salmon.

For human nutritional purposes, the most relevant measure of EPA + DHA fatty acids is to consider the amount present in the flesh oil of the fish. Typically, the flesh oil present in farmed fish is higher than that of wild fish.

Figures for farmed salmon presented by Stirling University's Institute of Aquaculture showed that Scottish farmed Atlantic salmon had combined EPA + DHA which ranged from 15.4% - 18.2% of the overall oil content of the fish. Figures for wild Atlantic salmon can be as high as 19% of the oil, but the paper also states "because the farmed fish had more flesh oil than the wild fish, they contained more than twice the as much EPA+DHA on an absolute basis than wild fish."

The message overall (and taking into account both Scottish and US studies on the Omega 3 content of various species of salmon) is that whole Scottish farmed Atlantic salmon has slightly less EPA and DHA than wild salmon, but in terms of dietary contribution can deliver about twice the amounts of these substances due to its higher flesh oil content.

DHA v EPA

Typically the ratio of DHA to EPA present in farmed Atlantic salmon is 2:1. This is important because DHA is the longest chain fatty acid for which we have an absolute nutritional requirement and the only one that is purely marine in origin. In Japan, the term 'Omega 3' refers only to DHA – this is the more crucial of the two.

The 2005 version of the Young's Seafood/Macrae Food Group product specification for farmed Atlantic salmon requires a minimum of 15% EPA + DHA in the total oil, with a DHA:EPA ratio of 2:1.

In summary

It is now generally accepted that Omega 3 fish oils can play an invaluable role in human health and should be consumed at least once a week by everyone.

The levels of Omega 3 fish oils in salmon do vary by species and provenance. However, farmed fish is a highly valuable source of DHA+EPA and in fact a more effective source than wild fish, owing to the generally higher flesh oil content.

There is of course great variability, both in wild fish owing to seasonal factors, and in farmed fish depending on the feed used. However, Young's can confirm that its basic specification for all farmed Atlantic salmon ensures that consumes can rely on these products as an effective source of Omega 3 as part of a healthy diet regime.