



The official online newsletter from Nu-Mega

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## Are children getting enough long chain Omega-3s?



A very disturbing report from the NSW Schools Physical Activity and Nutrition Survey (SPANS) indicates that around 2 in 3 children consume fish less than once a week with over 30% not eating fish at all. So, where do they get their long chain Omega-3s?

Almost 5,500 children aged from 5 to 16 years were surveyed in 2004 on their food habits. SPANS also looked at many other factors including overweight and obesity, physical activity, cardiorespiratory fitness, eating patterns, influences over food and drink choices and markers of chronic disease. The full report was released in May 2006 and can be found at <http://www.health.nsw.gov.au/pubs/2006/spans/>.

But back to Omega-3s... A weekly intake of 2 to 3 meals of fish high in Omega-3 fatty acids is recommended. Most of the children in the NSW study did not consume anywhere near this amount.

Omega-3s are recognised as essential nutrients, just like vitamins and minerals. Recent official suggested dietary targets in Australia and NZ to help optimise diets and reduce risk of chronic health conditions such as heart disease, are 610mg long chain Omega-3 per day for males over 14 years and 430mg per day for females over 14 years.

The average intake for 12 to 18 year olds is less than 200mg /day – but for those eating little or no fish, intakes are far lower.

How we can we encourage our children to consume more long chain Omega-3s?

- Include more fresh or canned fish and seafood in the weekly menu ...see *In a Nutshell* on page 3.
- Substitute foods enriched with Omega-3s for regular versions eg, bread, milk, tortillas – check food labels carefully for Omega-3 DHA and EPA.



## From the Editor

Welcome to our spring edition of DHA Update! We bring you news of the recent ISSFAL conference in Cairns, which had a focus on Omega-3s and attracted over 500 researchers from around the world. Research in this area is rapidly advancing with much greater understanding now of long chain Omega-3s' actions in the body. Influence on gene expression is a major role and this helps explain why Omega-3s have such a widespread impact on health – from synergistic effects with exercise on body weight to protection of the brain and nervous system.



Fish and other seafood are our major sources of long chain Omega-3s. We know that most people don't eat enough fish but our news story indicates that many children eat practically no fish. Our *In a Nutshell* segment compares the long chain Omega-3 content of canned fish – excellent options for increasing Omega-3s.

Our *Behind the Media* story compares the benefits of raising Omega-3 levels in the population to increasing placement of defibrillators in the community – the winner is clear.

Nu-Mega Ingredients is pleased to be a member of the new Omega-3 Centre which is holding its inaugural symposium on 31 October in Melbourne – see upcoming conferences for details. Hope to see you there.

Remember to forward this newsletter to colleagues who may find it of interest and feel free to use the material in your own publications – acknowledgement appreciated!

Contact me at [wmorgan@innovationsandsolutions.com](mailto:wmorgan@innovationsandsolutions.com) or PO Box 1189, North Sydney 2059 for further details on these stories or with suggestions for future issues.

**Wendy Morgan**  
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## Omega-3s – the cutting edge

Instead of DHA Update's usual Interview with an expert, in this issue we report on the highlights of a recent conference which had a focus on long chain Omega-3s – the ISSFAL\* meeting held in Cairns, Australia in July. Over 500 scientific researchers into Omega-3s and other lipids gathered from around the world for lively discussions on their new findings.

### Diabetes

A half day satellite symposium on Omega-3s and diabetes discussed the positive roles which can be attributed to Omega-3s in the progression, prevention and treatment of Type 2 diabetes and insulin resistance. Omega-3s were shown to work in many ways<sup>1,2</sup>. They:

- alter gene expression, which increases the body's use of fat as fuel, rather than storing it with resultant increased weight
- influence membrane fluidity so that substances can move more easily in and out of cells
- replace Omega-6s
- reduce oxidative stress and inflammation

### The FINGEN Study: Risk factors for heart disease<sup>3</sup>

Will different groups in the population have greater benefit from consuming more Omega-3s? Funded by the UK Food Standards Agency, the FINGEN study aimed to answer this question. So far, the study has shown that subjects with the genotype apoE4, which is linked to a higher risk of heart disease, showed the greatest benefit of Omega-3s through changes in inflammatory markers. Around 25% of the UK population has the genotype apoE4. Males showed a greater lowering of triglycerides as a result of taking the Omega-3 rich fish oil for 8 weeks. More results will be forthcoming.

### Omega-3s from marine sources versus plant sources

The message was loud and clear. Long chain Omega-3s (DHA and EPA) found in fish and seafood are more effective than the shorter chain Omega-3, alpha-linolenic acid (ALA), from plants. Brain and retinal DHA levels are important for optimal function of the nervous system<sup>4</sup>. The conversion of ALA to the long chain DHA is inefficient and if the diet is deficient in DHA, ALA does not compensate.

### The brain

Omega-3 DHA has been shown to be the precursor of a number of substances which help protect the brain and nervous system from oxidative stress and inflammation. Dr Nicolas Bazan of the LSU Neuroscience Center of Excellence discussed the interplay of DHA-derived neuroprotective signalling

factors to counteract the cell-damaging events triggered by stroke and Alzheimer's disease (which is also associated with the apoE4 genotype).

There was considerable debate over DHA versus EPA in the area of depression. There are still no clear answers but the story linking long chain Omega-3s in general to better mental health is growing.<sup>5,6,7</sup>

Dr Stanley Rapoport provided a fascinating insight into the brain's requirements for fatty acids. Less than 0.2% of ingested Omega-3 ALA reaches the brain in the form of Omega-3 DHA – most is simply used by the body as a source of kilojoules. By injecting radiolabelled DHA into healthy volunteers, he was able to measure the rate of incorporation of DHA from the bloodstream into the brain. This was shown to be 4.6mg DHA per day. Assuming that only 1/100 of ingested DHA is delivered to the brain, Dr Rapoport's study suggests that 460mg DHA is the daily dietary requirement.

### ...in children

Researchers from Western Australia presented on findings in children and adolescents. Dr Dunstan provided evidence of improved hand and eye coordination in a group of 2 ½ year old children which was associated with their mothers' intake of long chain Omega-3s during pregnancy<sup>8</sup> and Dr Oddy discussed a link between low DHA status and mental health morbidity, aggressive behaviour and attention deficits<sup>9</sup>. These are preliminary trials and we can expect much more research in these areas.

### The eye

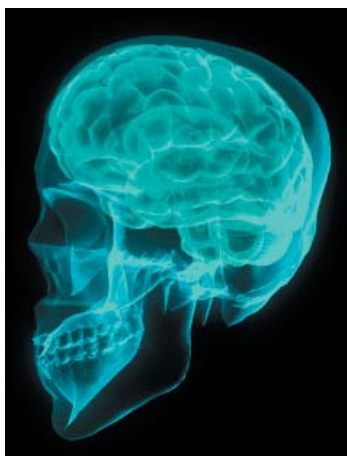
Speakers commented on the role of DHA in promoting corneal nerve regeneration<sup>10</sup> and the possibility of its benefits in decreasing intraocular pressure with age – so helping to manage glaucoma<sup>11</sup>. A study looking at the relationship between dietary fat intake and age-related eye disease in people with early or intermediate age-related macular degeneration showed no relationship with saturated fat, Omega-6 or ALA but did find that the people reporting the highest intakes of DHA and EPA were 20-25% less likely to progress to vision loss<sup>12</sup>.

It was an exciting week with plenty of opportunity to talk to the researchers between sessions. I recommend future ISSFAL meetings to anyone with a scientific interest in the subject – editor.

\*ISSFAL = International Society for the Study of Fatty Acids and Lipids

Speakers referenced from ISSFAL, 2006:

- |  |                      |
|--|----------------------|
| 1. Deeg MA, Diabetes Satellite Symposium | 7. Rapoport S.       |
| 2. Mori TA, Diabetes Satellite Symposium | 8. Dunstan JA.       |
| 3. Calder, P, Kofler BM, Minihane AM     | 9. Oddy WH.          |
| 4. Sinclair AJ.                          | 10. Bazan NG.        |
| 5. Rees A-M.                             | 11. Nguyen CTO.      |
| 6. Hibbeln J.                            | 12. San Giovanni JP. |





## Making it easier to enjoy **Omega-3s**



Heinz® Omega-3 Spaghetti has been specially developed to have the same great taste of regular Heinz® Spaghetti extra cheesy with the hidden benefit of Omega-3. Your body cannot make Omega-3 but Omega-3 helps to promote healthy brain development and function.

Windsor Farm Hi-5 Fruit Straps with Omega-3 are a healthy, tasty snack made with real fruit and no added sugar. They make a **smart** school lunch box addition because they're enriched with Omega-3 DHA and kids love them.



## Behind the **Media**

### Live saving Omega-3s

Your heart pushes out around 300 litres of blood every hour and up to 5 times that much during exercise. That is equivalent to 2.5 million litres a year – the amount of water in an Olympic sized swimming pool! The heart is a very powerful and effective pump but if the mechanism which keeps it rhythmically pumping goes wrong it can be life threatening.

There has been some media coverage recently based on an article in the American Journal of Preventive Medicine which indicates that the Omega-3s found in fish lower the risk of fatal heart rhythm disturbances – they help keep your heart pumping effectively.

Using a modelling system of a hypothetical population aged 30 – 84 years and data from previous medical studies, the researchers compared the impact of raising blood levels of Omega-3s to implanted cardioverter defibrillators (IDFs) and also to the distribution of automated external defibrillators (AEDs)

into homes and public areas. These are the machines which bring people 'back to life' after suffering a cardiac arrest or heart attack. They use an electric shock as shown frequently on TV medical shows.

The researchers found that raising Omega-3 levels would have approximately 8 times the impact of distributing defibrillators and twice the impact of using IDFs. 75% of the reduction in mortality due to Omega-3s would result simply by increasing Omega-3 levels in the healthy population – those people with no apparent risk for heart arrhythmias.

Although this was a computer simulation, it is another piece of the jigsaw which is rapidly starting to resemble a picture of whole health benefits from optimal intakes of Omega-3s – for everyone.

More information: Kottke TE et al. Preventing Sudden Death with n-3 (Omega-3) Fatty Acids and Defibrillators. Am J Prev Med 2006;31(4):316-23.

## In a **Nutshell**

### How much long chain **Omega-3** is in **canned fish**?

A trip to the supermarket can be confusing as there are so many varieties of canned and packet fish available now. Nearly all of them are good sources of long chain Omega-3 EPA and DHA and some are excellent sources! The following table indicates a selection of different types of fish and one example of prawns.



Unfortunately seafood such as canned anchovies, crab meat and smoked oysters do not include their Omega-3 content on their labels and some fish products do not state this useful information.

So a message to the producers of these foods – please list the Omega-3 EPA and DHA levels on pack!

Based on nutrition information panels on products in a Sydney supermarket 3 October 2006

\* EPA + DHA amounts not listed individually

\*\* Approximate only as amounts provided in grams on pack

Canned fish	Serve size	Content of Omega-3 EPA / DHA mg per serve	Content of Omega-3 EPA / DHA mg per 100g	Total EPA + DHA mg per 100g
King Oscar Sardines in olive oil 45g can	37g	300 / 500	800 / 1200	2000**
Paramount Atlantic Salmon 170g can	56g	370 / 690	660 / 1230	1890
John West Scottish Sardines in tomato sauce 110g can	110g	825 / 1100	750 / 1000	1750
Woolworths Select Red Salmon 415g can	83g	416 / 557	501 / 671	1172
John West Tuna Tempters oven-dried tomato and basil 100g can	90g	180 / 360	200 / 400	600
Santa Maria Portuguese Sardines in tomato sauce 120g can	60g	270*	450*	450
Greenseas Pink Salmon 210g can	85g	315*	370*	370
Safcol Tuna with sweet chilli sauce 95g can	95g	38 / 304	40 / 320	360
Greenseas Tuna chunks in springwater 95g can	65g	30 / 180	50 / 280	330
Sole Mare Tuna in oil 425g can	70g	224*	320*	320
Greenseas Tuna chunks in brine 180g can	60g	25 / 145	45 / 245	290
Safcol Premium Salmon with lemon & dill in springwater 100g pack	100g	40 / 240	40 / 240	280
Woolworths Select Peeled Prawns 200g can	60g	90 / 72	150 / 120	270
Safcol Tuna naturally smoked 95g can	64g	20 / 131	32 / 205	237
Woolworths Select Flaked tuna in tomato with basil 95g can	70g	7 / 140	10 / 200	210
John West Tuna Tempters mango chilli	100g	21 / 150	21 / 150	171
Sirena Tuna in oil Italian style 185g can	70g	90*	135*	135
Safcol Premium Tuna with lemon & black pepper in springwater 100g pack	100g	8 / 45	8 / 45	53



## Research Roundup

### Why don't doctors recommend fish oil?



We have previously reported on research showing the benefits of Omega-3 fatty acids in lowering risk of cardiac-related death compared to drugs such as statins, fibrates and resins. In Issue 5 of DHA Update we highlighted the Lewin Group study which suggested a saving of \$3.1 billion over a 5 year period if sufficient long chain Omega-3s were consumed by the over 65s.

In this issue, we have highlighted the modeling exercise that indicated raising the general population's intake of Omega-3s is likely to be more useful than placing defibrillators more widely in the community.

Despite all the many studies showing

the health and cost saving benefits of Omega-3s, a recent study of family doctors in the USA indicates they rarely recommend them to their patients with cardiovascular disease. A survey was mailed to randomly selected doctors in Washington State. The results included:

- 99% agreed that nutrition is important in CVD prevention
- 92% felt that they have an essential role in giving dietary advice
- 57% knew of fish oil's effectiveness in secondary prevention of CVD
- but only 17% were identified as high fish prescribers

The authors concluded that despite knowledge of fish oil's benefit and favourable attitudes toward nutritional therapy, family doctors infrequently recommend fish oils for their CVD patients. They recommend that strategies to improve awareness of fish oil's effects on sudden death and to reduce time barriers associated with dietary counselling should be explored further to promote this important advice.

Oh RC, Beresford SA, Lafferty WE. The Fish in Secondary Prevention of Heart Disease (FISH) Survey--Primary Care Physicians and {omega}3 Fatty Acid Prescribing Behaviors. *J Am Board Fam Med.* 2006;19(5):459-67.

### Fish as a symbol

The following authors' abstract indicates an original perspective for the promotion of Omega-3s and fish:

Fish is a food with unique psychotropic properties. Consumption of long-chain Omega-3 fatty acids, rich in seafood, reduces depression, aggression and anger while improving mental well-being. We posit that symbols of fish have become linked to the emotional states induced by long-chain fatty acid by associative pairings, both conscious and unconscious. The limbic and hippocampal activity necessary for memory formation containing emotional content and the labeling of social context by cortical processes appears to be optimized by diets rich in long-chain Omega-3 fatty acid. In this critical literature survey, we find that fish have been culturally labeled as symbols of emotional well-being and social healing in religious and medical practices among independent cultures, for at least six millennia. This understanding of the perception of fish as a symbolically healing or purifying food can assist current messages improving public health.

Reis LC, Hibbeln JR. Cultural symbolism of fish and the psychotropic properties of omega-3 fatty acids. *Prostaglandins Leukot Essent Fatty Acids.* 2006 Sep 5; [Epub ahead of print]

## Conference Calendar

### Long Chain Omega-3 Symposium

**Date:** 31 Oct 2006

**Where:** State Library of Victoria Theatre, Entry 3, La Trobe St, Melbourne

**What:** Organised by the recently established Omega-3 Centre and ILSI Australasia, the meeting will discuss the science for long chain Omega-3s, their roles in the body, recommendations for intake and potential general level health claims for foods containing these essential nutrients.

**Who should attend:** Food industry (marketing and technical, suppliers, manufacturers), dietitians, scientists, doctors, cardiologists, nutritionists, other health professionals, administrators and educators

**More info:** <http://www.daa.asn.au/events.asp?pageID=2145835254&eventID=2989>

### Fats and oils – Their role in food and health

**Date:** 1 – 3 November 2006

**Where:** FSA Werribee Campus, Melbourne

**What:** This is the Biennial Conference of the Australasian Section of AOCS. Keynote addresses include Omega-3 in human health, ISSFAL highlights and industry changes with current oil initiatives. There are short courses on lipid oxidation and antioxidants and production of margarine, dairy blends and spreads.

**Who Should Attend:** Food manufacturers, ingredient suppliers, researchers, nutritionists, etc.

**More info:** <http://www.aocs.org/member/section/austral/06mtg.asp>

### Nutrition through the life cycle

**Date:** 29 Nov – 2 Dec 2006

**Where:** University of NSW, Sydney

**What:** The Annual Scientific Meeting of the Nutrition Society of Australia will include plenary themes such as nutrition in-utero, nutrition through the life cycle, bioactives, micronutrients, resistant starch and aboriginal nutrition. Researchers will also present their latest findings on a wide variety of nutrition areas.

**Who should attend:** Scientists, dietitians, medical profession, food industry (trade displays available)

**More info:** <http://www.nsa.asn.au/conference2006/index.html>