DHA Update

Issue 7

The official online newsletter from Nu-Mega

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Maintaining **Baby Boomer** brains!

We know that Omega-3 DHA is critical for the healthy growth and development of an infant's brain especially in the third trimester of pregnancy and the first years of life. The role of Omega-3s in behaviour and learning in older children is also emerging. But what about the older brain? Are Omega-3s still important?

Many baby boomers already eat more oily fish, Omega-3 enriched foods or even take fish oil supplements to boost their Omega-3s for heart health. They could well be doing their brain good too!

Cognitive decline

People with higher levels of long chain Omega-3s have been shown to have a reduced risk of decline in verbal fluency, particularly in people with high blood pressure and/or high blood fats[1].

The suggested protective effect of fish consumption and the intake of Omega-3s on cognitive decline has been strengthened by a Dutch study which showed that elderly fish consumers had significantly less cognitive decline over a 5 year period than did elderly non-consumers[2].

What is the role of Omega-3s in helping to keep the brain healthy? DHA is integral to the structural and biochemical functions of a healthy nervous system so it is not surprising that reduced levels in the brain are associated with diminishing cognitive ability.

Alzheimer's disease

20–40% of the US population over 85 years may have Alzheimer's disease[3]. Similar figures would be expected in other westernised countries.

Alzheimer patients have lower levels of DHA in plasma and brain tissues compared to age-matched controls and so increased DHA in the diet could help correct the DHA deficiency in the brains of people with this disease[3].

Whilst there has not been a definitive trial to prove the effects of DHA and EPA in preventing cognitive decline or Alzheimer's disease, experts suggest:

The possibility that the fatty acids DHA and EPA in fish and fish oil may delay the ravages of Alzheimer disease is of great interest[3].

References

1. Beydoun MA et al. Plasma n-3 fatty acids and the risk of cognitive decline in older adults: the Atherosclerosis Risk in Communities Study. Am J Clin Nutr. 2007 Apr;85(4):1103-11.

2. van Gelder BM et al. Fish consumption, n-3 fatty acids, and subsequent 5-y cognitive decline in elderly men: the Zutphen Elderly Study. Am J Clin Nutr. 2007;85(4):1142-7.

3. Connor WE et al. The importance of fish and docosahexaenoic acid in Alzheimer disease. Am J Clin Nutr 2007;85:929 –30.

Inside this **Issue**

From the **Editor**

Much has been happening in the world of Omega-3 research since our last newsletter. In this issue we focus on the brain including that of our ancestors with an interview with expert Associate Professor Neil Mann and look at the effects of Omega-3s on children's brains and behaviour and baby boomer benefits from Omega-3s – as well as current evidence for cancer and fish consumption.

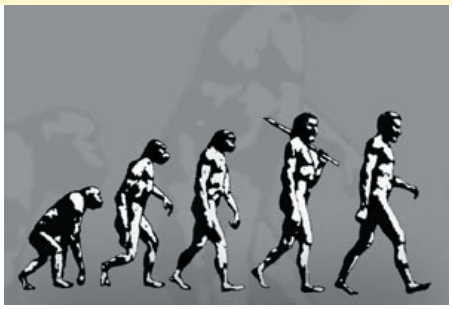
Remember to forward this newsletter to colleagues who may find it of interest and feel free to use the material in your own publications – acknowledgement appreciated!

Please contact me at wmorgan@innovationsandsolutions.com or PO Box 1189, North Sydney 2059 for further details on these stories or with suggestions for future issues.

Wendy Morgan APD
Nutritionist

Interview with the experts - Associate Professor Neil Mann

Omega-3s and the human diet through time



We hear quite a bit about the current western diet and its high saturated fat and sodium content. But did you realise that the type of fat we eat has changed enormously through evolution? Associate Professor Neil Mann of RMIT University in Melbourne has investigated the diet of our ancestors.

Has the intake of Omega-3s in the human diet changed through evolution?

Yes indeed! Our intake of Omega-3s used to be a lot higher than it is now. We're talking about a daily intake of around 1000mg of long chain Omega-3s in pre-agricultural times (over 10,000 yrs ago) compared to only about 100-200mg per day nowadays. This is a 6-fold reduction in intake.

Secondly, the general consensus is that the current western diet has a ratio of Omega-6s to Omega-3s of about 12 to 1 whereas humans evolved with a dietary ratio of more like 3 to 1.

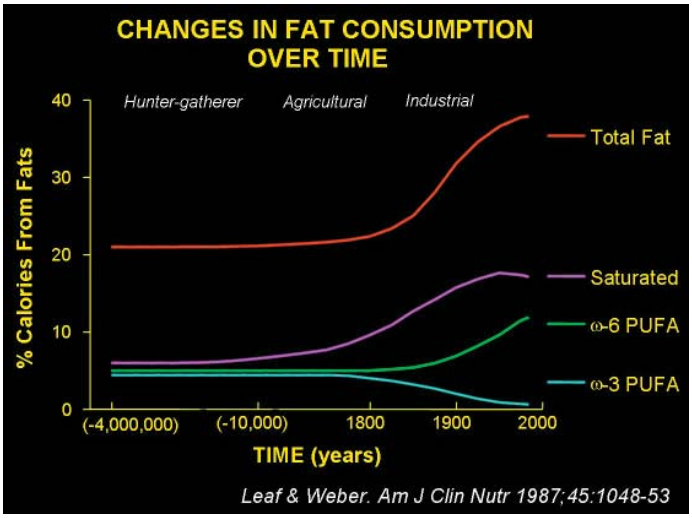
What caused these changes?

It was the start of agriculture which led to imbalance of Omega-3s to Omega-6s, the two types of polyunsaturated fats. Agricultural societies only started to grow 10,000 years or so ago but our ancestors lived as hunter-gathers for 2 to 3 million years.

Once we shifted to agriculture we ate a lot more grains which contain virtually no Omega-3s. Previously as hunter-gatherers the diet was based on plants containing short chain Omega-3s and animal organs including brains which are rich in long chain Omega-3 DHA.

Why were Omega-3s so important in evolution?

Because 2 to 3 million years ago the forerunner of the human brain took off in terms of size and complexity. Brain enlargement has two requirements: firstly, an increased energy supply as the brain is so energy demanding and secondly, a dietary source of long chain polyunsaturated fat. Our ancestors were scavengers and learnt how to access bone marrow (energy rich) and brain (Omega-3 DHA rich) – unlike animals whose brains did not develop as much as humans. Humans are not good converters of plant sourced shorter chain Omega-3s (ALA) and Omega-6s to the long chain types needed by the brain. We had to have these in our diet.



What about changes in the last few decades?

There are only a few studies in this area so it is a hard question to answer. There is no data to indicate we are eating more fish. White fish is not particularly high in long chain Omega-3s because it so low in fat. Oily fish – sardines, mackerel, salmon, tuna – are good sources but we eat mostly white fish.

Red meat in Australia is a source of Omega-3s due to the feeding practices, with pasture feeding being predominant. Grain-fed animals have virtually no long chain Omega-3s.

We see brains being consumed rarely nowadays and egg consumption, a minor source of Omega-3s, is low.

How can we improve our modern diet?

In two main ways – the total amount of Omega-3s should go up and the ratio with Omega-6s needs to improve.

There are huge sales of Omega-3 rich fish oil capsules nowadays. To meet the recommendations of various health authorities, many people resort to capsules. If you just rely on fish, red meat and eggs you are going to struggle to reach 500mg a day of DHA and EPA. Foods enriched with DHA and EPA will help but you need to include them every day as every little bit adds up and counts. Another key action is to eat more oily fish.

We need to reduce our Omega-6s and many are already starting to do this. For example, some margarine type spreads are made with canola oil now. This is one of the few vegetable oils which contains Omega-3 ALA (~ 10%) without too much Omega-6 (~ 20%).

What are your current research interests relating to Omega-3s?

Because red meat has more Omega-3 DPA we have been looking at it to see if it has any specific health outcomes for humans. It can be elongated to DHA and probably retroconverted to EPA.

Further reading:
1. Mann NJ. Omega-3 fatty acids from red meat in the Australian diet. Lipid Technology. 2005;17(4):79-82
2. Cordain L, Watkins BA, Mann NJ. Fatty acid composition and energy density of foods available to African hominids. Evolutionary implications for human brain development. World Rev Nutr Diet. 2001;90:144-61.

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

Batchelors Heartwise baked beans

Launched in Ireland in March 2007 by market leader Batchelors. Watch for a new 'mini-serve' version with distribution beyond Ireland expected.

McCain's SuperCrunchy Omega-3 Fries

Launched in June 2007 in Australia, a 125g portion of these oven-baked fries contains 448mg of Omega-3 fatty acids including 42mg DHA and EPA. The SuperCrunchy Omega-3 fries are coated in a batter containing Omega-3s and are prepared in healthy canola oil. Their total fat content is less that 5g per serve and they carry the Heart Foundation tick of approval.

Heinz Mini Meals range

This range of 6 was launched in October 2006 and is currently distributed in all major UK retail outlets with pan-European distribution.

Kingsmill Headstart bread

This is the first mainstream brand Omega-3 enhanced bread in the UK market and was launched September 2006.

Behind the **Media**

Can Omega-3s help prevent cancer?

We often hear of studies showing benefits of Omega-3s and recently more have appeared relating to effects on cancer. But what is the whole picture?

The Cancer Council New South Wales has conducted a systematic literature review on the association between Omega-3s, fish and the risk of breast, bowel and prostate cancer. Evidence from experimental studies in animals shows that long chain Omega-3s can suppress the growth of cancer cells.

The review found a higher fish intake might be associated with a slightly decreased risk of breast, rectal and prostate cancer. No association was found between fish intake and colorectal or colon cancer. The level of fish intake associated with a decreased risk varied, but was approximately 2-3 or more serves per week.

Unfortunately, the research studies available were too limited in number, consistency and quality to show a definite link between Omega-3s and a reduced cancer risk.

Interestingly, results suggest that a ratio of more Omega-3s and fewer Omega-6 fatty acids in the diet may protect against breast and possibly even colorectal cancer.

The Cancer Council recommends people:

- Eat fish (preferably oily) at least two times per week
- Include some plant foods and oils rich in Omega-3 fatty acids in their diet.

These recommendations are consistent with those made by Heart Foundations around the world and the Dietary Guidelines for Australian Adults.

A summary of the review is available on The Cancer Council's website at http://www.cancercouncil.com.au/html/healthprofessionals/nutrition_physical/downloads/Omega3_hp_summary.pdf. For further information please contact Hayley Ralph, Nutrition Project Officer, The Cancer Council New South Wales (hayleyr@nswcc.org.au).

In a **Nutshell** - European Health Claims Regulations

A challenge for food innovators but essential for consumer acceptance, the new European Regulation on Nutrition and Health Claims came into force this year. Nu-Mega Ingredients has teamed up with two other suppliers to gain approval for new health claims related to long chain Omega-3 fatty acids. Mike Simpson reports from Nu-Mega Ingredients, UK:

Public interest in long chain Omega-3s has never been higher and enthusiasm continues to grow as more and more reports of successful scientific health studies hit the headlines. The new Regulation could give Omega-3 fortified food manufacturers in the EU a golden opportunity to capitalize on this strengthening science base and with an official stamp of approval, gain even greater consumer acceptance of Omega-3 health claims. Until now every EU country has followed its own rules on health claims making life difficult for companies with customers across Europe.

Authorities in Member States such as the Food Standards Agency in the UK are now taking submissions for an EU-wide list of permitted claims. These so called 'Article 13' claims must refer to the role of a nutrient in health and be supported by generally accepted scientific evidence. They must also be well understood by the average consumer.

Nu-Mega is working with Martek Biosciences Corporation, Ocean Nutrition Canada and the regulatory consulting firm Cantox Health Sciences International to prepare four claim dossiers focusing on the unique role of Omega-3 DHA.

1. DHA supplementation supports eye and brain function
2. Maternal DHA supplementation supports a healthy pregnancy
3. Maternal DHA supplementation supports infant eye and brain development
4. Maternal DHA supplementation supports DHA accretion of the foetus

Of course, the weighing of scientific evidence by regulators is a notoriously unpredictable business and there is no guarantee that these claims will make it unscathed on to the approved list. However, given a fair assessment they should be approved enabling EU food manufacturers to spell out more clearly than ever, the remarkable health benefits of Omega-3 DHA.

Research **Roundup**

Children, brain, behaviour and Omega-3s

You may have seen the headlines **Clinical trial boosts Omega-3's ADHD benefit** or seen a recent TV program on the benefits of Omega-3s for children's behaviour and learning ability. These refer to a study by Australian researcher Natalie Sinn which confirms earlier work from Dr Alexandra Richardson's group in the UK.

Dr Sinn's study investigated the effects of supplementation with polyunsaturated fats (720mg long chain Omega-3s and 80mg Omega-6) on symptoms typically associated with ADHD. A group of Australian children aged 7 - 12 years with ADHD indications (measured by the Conners ADHD Index) participated in a well designed study over 30 weeks.

In the first 15 weeks children were given either the supplement or placebo. During the second 15 weeks all the children received the Omega-3 fats.

Significant effects of the supplement were found on parent ratings of core ADHD symptoms, inattention and hyperactivity/impulsivity compared to the placebo. These benefits were seen across both groups of children in the second part of the study when all received the supplement.

The authors concluded that ADHD related problems with inattention, hyperactivity, and impulsivity might respond to treatment with polyunsaturated fats and that improvements may continue with supplementation extending to 30 weeks.

Sinn N, Bryan J. Effect of supplementation with polyunsaturated fatty acids and micronutrients on learning and behavior problems associated with child ADHD. J Dev Behav Pediatr. 2007;28(2):82-91.

Colorectal cancer and Omega-3s

Researchers from the University of Edinburgh investigated the effects of various fatty acids on colorectal cancer risk. This was a national prospective case-control study in Scotland (1999-2006) which included 1,455 cases and 1,455 matched controls.

Significant dose-dependent reductions in risk were associated with increased consumption of Omega-3 polyunsaturated fatty acids as well as with consumption of EPA and DHA individually. The researchers concluded that the observed different effects of different types of fatty acids underline the importance of type of fat in the cause and prevention of colorectal cancer.

Theodoratou E et al. Dietary fatty acids and colorectal cancer: a case-control study. Am J Epidemiol. 2007 Jul 15;166(2):181-95.

Conference Calendar

The Omega-3 Centre Symposium

Date: 3 December 2007

Where: Sydney Fish Market, Sydney, Australia

What: Organised by The Omega-3 Centre, this meeting will discuss the recommendations from their recent Scientific Consensus Workshop on children and Omega-3s. A cardiovascular session will feature keynote speaker Dr Bill Harris, co-creator of the Omega-3 Index.

Who should attend: doctors, paediatricians, psychologists, dietitians, nutritionists, other health professionals, nutrition policy makers, educators and the food industry

More info: www.Omega-3centre.com

Incorporating Omega-3 in the Food Chain - Why, Where and How?

Date: 15 November 2007

Where: London, UK

What: Following an overview of the health benefits of long chain Omega-3 fatty acids and their place in the diet, this conference will communicate new knowledge regarding current intakes in the UK. Plant technologies and animal nutrition practices to increase the long chain Omega-3 fatty acid composition of key sources of dietary lipids will also be discussed, along with the search for alternative sources.

Who Should Attend: The conference, based on findings from the EU-funded Lipgene Project, will be of particular interest to food technologists, public health nutritionists and researchers in these respective fields.

More info: www.nutrition.org.uk/lipgeneconferences

Life Stage Nutrition Conference 2008

Date: 7 February 2008

Where: Sheraton Frankfurt Hotel & Towers, Frankfurt, Germany

What: This new conference is a must for anyone wishing to gain valuable new ideas and insight into developing food and drink products aimed at child development and healthy ageing. It includes the latest market & scientific research related to foods targeted at different life stages.

Who should attend: Product development, technical, marketing & brand managers, food technologists, food and drink manufacturers

More info: www.lifestage-nutrition.com/index.php

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