

# SCIENCE NEWS DIGEST



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## IN THIS ISSUE:

### DIET & OPTIMUM HEALTH CONFERENCE

- *Omega-3 Fatty Acids  
Presentation Abstract*

### RESEARCH UPDATES

- *Carotenoids and  
Metabolic Syndrome Risk*
- *Lowering your risk of  
Asthma*
- *Migraines*
- *Soy Isoflavones*
- *Research on Lutein*
- *Neural Tube Defects*
- *Cancer research on  
Blueberries*

## EFFECT OF OMEGA-3 FATTY ACID SUPPLEMENTATION ON CARDIOVASCULAR RISK FACTORS AND INFLAMMATORY MARKERS

*Presentation at the Linus Pauling Institute's  
DIET AND OPTIMUM HEALTH CONFERENCE*



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**GNLD's Scientific Advisory Board** is proud to announce that the complete results of the Omega-3 Salmon Oil Plus clinical trial has been accepted for poster presentation at the *Linus Pauling Institute's* 5th biennial ***Diet and Optimum Health Conference!***

The magnitude of this achievement is illustrated by the fact that only a select number of abstracts are chosen for presentation from innumerable submissions. The *Linus Pauling Institute* at Oregon State University is one of the nation's first *Centers of Excellence for Research on Complementary and Alternative Medicine* designated by the *NCCAM (National Center for Complementary and Alternative Medicine)* of the *National Institutes of Health (NIH)*.

This year's ***Diet and Optimum Health Conference*** will focus on dietary and lifestyle approaches to improving human health and preventing or treating disease. Topics will include dietary supplements, micronutrients, and antioxidants. World-renown scientists and health professionals in biochemistry, nutrition, preventive medicine, public health, endocrinology, cardiology, oncology, and gerontology are expected to attend.

Dr. Arianna Carughi will be presenting the results of the clinical trial on Wednesday afternoon, 13 May 2009 in Portland, Oregon, USA. The results are summarized in the abstract on the following page.

# RESULTS OF OMEGA-3 FATTY ACIDS CLINICAL TRIAL

## EFFECT OF OMEGA-3 FATTY ACID SUPPLEMENTATION ON CARDIOVASCULAR RISK FACTORS AND INFLAMMATORY MARKERS

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Diets rich in omega-3 fatty acids (n-3 FA) are associated with lower cardiovascular (CV) morbidity and mortality. Numerous mechanisms including triglyceride-lowering and antiinflammatory effects contribute to the n-3 FA protection. We investigated the effect of low levels of marine sourced n-3 FA supplementation on CVD risk factors and on markers of inflammation in healthy, normotriglyceridemic volunteers. Thirty one men and women took a supplement providing 1070 mg total n-3 FA (480 mg docosahexaenoic acid, DHA; 460 mg eicosapentaenoic acid, EPA; 50 mg docosapentaenoic acid, DPA and 80 mg other n-3 FA) daily for 8 wks. By 4 wks, values for % EPA, DPA and DHA in red blood cell (RBC) membranes were significantly higher than at baseline, and kept increasing until the end of the study when they were 56%, 16% and 19% higher ( $p < 0.01$ , 0.05 and 0.01, respectively). While there were no changes in % linoleic acid or %  $\gamma$ -linolenic acid in RBC membranes, % arachidonic acid was 10% lower after supplementation ( $p < 0.05$ ). At 8 wks serum triglyceride levels were 17% lower ( $p < 0.01$ ); Omega-3 Index (% DHA + EPA in RBC) was 38 % higher ( $p < 0.01$ ) and the omega-6/omega-3 ratio was 30% lower ( $p < 0.05$ ) than at baseline. Lp-PLA2 levels were slightly higher ( $147 \pm 43$  and  $157 \pm 51$ ;  $p < 0.05$ ) but well within the normal range. While there were no significant changes in IL-6 and TNF-alpha levels, Inflammatory Index was 68% lower (% AA:% EPA in RBC;  $p < 0.01$ ) after supplementation. This study shows that supplementation with relatively low levels of marine sourced omega-3 fatty acids can quickly improve cardiovascular risk factors and modify fatty acid RBC membrane composition consistent with a lower inflammatory state.

## Research Updates

### **Carotenoids**

*Reducing metabolic syndrome risk by 50%!*

A new study published in the May 200 issue of the Journal of Nutrition concluded that men with the greatest dietary carotenoid intake had a 58% lower risk of developing Metabolic Syndrome (MetS).

First coined by Dr. Gerald Reaven at Stanford University (a past speaker at the GNLD – Arthur Furst lecture on Nutrition and Disease Prevention at the Stanford Health Library) Metabolic Syndrome (aka; Syndrome X or Reaven's syndrome) refers to a condition characterized by obesity, hypertension, glucose and insulin metabolism disturbance and a higher risk of heart disease and type 2 diabetes. 32% of adult Americans (15% for Europeans) are thought to be MetS sufferers.

This new Dutch study used a population based, cross-sectional protocol with 374 men aged 40 to 80 years. 22% of them had an existing MetS diagnosis. Their carotenoid intake (including alpha- & beta-carotene, beta-cryptoxanthin, Lycopene, Lutein and Zeaxanthin) was inversely associated with MetS risk.

In their conclusion the researchers wrote that "...higher total carotenoid intakes, were associated with a lower prevalence of metabolic syndrome and with lower measures of adiposity and serum triglyceride concentrations in middle-aged and elderly men."

*Source: Sluijs I, et al. Dietary carotenoid intake is associated with lower prevalence of metabolic syndrome in middle-aged and elderly men. J Nutr. 2009 May;139(5):987-92*

## **Low vitamin A & C intake:**

*Associated with increased asthma risk*

After reviewing 40 studies and 30 years of research on the subject a group from the University of Nottingham, in the UK concluded that low or suboptimal intake of vitamin A (as carotenoids and retinol) and vitamin- C are associated with a 12% higher risk of asthma.

Publishing for the May issue of the journal Thorax, the researchers concluded; “Our findings from (the current) systematic review and meta-analysis indicate that low levels of vitamin-C intake, and to a lesser extent vitamin-A, are consistently associated with asthma risk to a degree that, if causal, would be sufficient to be clinically relevant.”

According to the World Health Organization (WHO), 300 million people suffer with asthma, and 255,000 died of asthma in 2005...80% of which occurred in low to middle income countries. Asthma is also the most common chronic disease among children.

**Source: Allen S, et al. Association between antioxidant vitamins and asthma outcome measures: systematic review and meta-analysis. Thorax. [Epub ahead of print] doi: 10.1136/thx.2008.101469**

## **B-vitamins**

*Reduce migraine frequency, severity and disability*

According to researchers from the Genomic Research Center(GRC) at Griffith University in Brisbane, Australia, supplementation with B-vitamins 6, 12 and folic acid were found to produce a two-fold reduction in migraine disability.

According to World Health Organization (WHO) statistics, about 11% of the adult population of Europe, North, Central and South America suffer migraine chronic migraine impact. The highest prevalence is in the “productive years” (25 -55) and affect 6% of males and 18% of females. Publishing in April for an upcoming issue of Pharmacogenetics and Genomics, the GRC investigators showed in a randomized, placebo controlled protocol that B-vitamin

supplementation (2 mg folic acid, 25 mg B6 and 400 mcg B12) caused a halving of migraine disability after 6 months; along with reduction of frequency and severity of pain. No effect was seen for the placebo group. Not surprisingly, they also noted a significant 39% reduction in homocysteine levels (a cardio risk factor associated with B-vitamin inadequacy).

In comments and conclusions for the study lead researcher Lyn Griffith wrote; “These studies provide compelling evidence that lowering plasma homocysteine levels via folic acid coupled with B6 and B12 vitamin supplementation improved health-related productivity and therefore quality of life in these (migraine) patients.”

**Source: Lea R, et al. The effects of vitamin supplementation and MTHFR (C677T) genotype on homocysteine-lowering and migraine disability. Pharmacogenet Genomics. 2009 Apr 20. [Epub ahead of print]**

## **Soy isoflavones:**

*No adverse affect on breast tissue*

The discovery that pharmaceutical hormone replacement therapy (HRT) increases a woman’s risk of breast cancer has led many women to seek more natural alternatives. One of those has been soy. There is a strong, inverse association between soy intake and breast cancer risk in population studies; higher soy intakes equating to lower breast cancer risk. Components of soy called “isoflavones” have been thought to act as estrogen “mimics”. That ability has caused many to be concerned that they might have the same effect as HRT.

In a study published in the May 2009 issue of the Journal of Nutrition, scientists at the Cancer Research Center of Hawaii, showed that supplementation with soy isoflavones had no adverse effects on breast tissue density after 2 years; causing neither an increase nor a decrease. (Study design: 358 postmenopausal women, average age of 55, randomly assigned them to receive a placebo or one of two soy isoflavone doses; 80 or 120 mg per day for two years.) “The fact that hormone replacement therapy interventions, primarily those with progestins, and not those with estrogens alone,

modify breast density while soy isoflavones do not, offers some reassurance to those who have been concerned about adverse effects of soy supplementation on breast cell proliferation,” wrote the researchers.

These findings lend support to those published in the April 2009 issue of *Cancer Epidemiology, Biomarkers and Prevention*, (doi: 10.1158/1055-9965.EPI-08-0405) where two soy and breast health findings were presented. First, high intakes of soy during childhood may reduce a woman’s risk of breast cancer later in life by 58 per cent. Another component of the study (limited to Asian Americans) found a 20 to 25 per cent breast cancer risk reduction associated with high soy intakes during adolescence and as adults.

*Source: Maskarinec G, et al. Various doses of soy isoflavones do not modify mammographic density in postmenopausal women. J Nutr. 2009 May;139(5):981-6. Epub 2009 Mar 25.*

## Lutein helps eyesight of computer users

An eye-health study conducted in China shows the carotenoid Lutein is effective in improving the eyesight of long-term computer users following 12 weeks of supplementation.

Lutein, and its sibling Zeaxanthin, have long been associated with supporting and improving eye health; in particular for prevention of AMD (age-related macular degeneration) a leading cause of blindness. In their study, published in the April 2009 issue of the *British Journal of Nutrition*, researchers from Peking University showed, “Visual function of healthy subjects who received Lutein supplementation improved, especially in contrast sensitivity, suggesting that a higher intake of Lutein may have beneficial effects on visual performance.”

*Source: Ma L, et al. A 12 week lutein supplementation improves visual function in Chinese people with long-term computer display light exposure. British Journal of Nutrition. Early online publish by Cambridge University Press: 19 Feb 2009.*

## Vitamin B-12

### Neural Tube defects

A study on the importance of vitamin B-12 in women of child-bearing age was published in the March 2009 issue of *Pediatrics*. Researchers looked at vitamin B-12 levels in 278 women in Ireland over a period of 7 years. They found that women with low levels of B-12 not only have an increased chance of experiencing health problems themselves, but were also more susceptible to having children with serious birth defects.

Researchers concluded, “We suggest that women have vitamin B12 levels of [more than] 300 ng/L (221 pmol/L) before becoming pregnant. Improving B12 status beyond this level may afford a further reduction in risk, but this is uncertain.”

*Source: Molloy AM, et al. Maternal vitamin B12 status and risk of neural tube defects in a population with high neural tube defect prevalence and no folic Acid fortification. Pediatrics. 2009 Mar;123(3):917-23.*

## Blueberries

### Childhood Cancer Risk

The results of a recent study conducted at the Ohio State University suggest that extracts from blueberries may reduce tumors in infants and children and improve their survival rates.

Lead author Gayle Gordillo comments, “This work provides the first evidence demonstrating that blueberry extract can limit tumor formation by inhibiting the formation of blood vessels and inhibiting certain signaling pathways...Oral administration of blueberry extract represents a potential therapeutic strategy [against] endothelial cell tumours in children.”

*Source: Gordillo G, et al. Oral administration of blueberry inhibits angiogenic tumor growth and enhances survival of mice with endothelial cell neoplasm. Antioxid Redox Signal. 2009 Jan;11(1):47-58*