

SCIENCE NEWS DIGEST



Up-to-the-Minute Research and Education
for Health Care Professionals

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Greetings HPC Members and welcome to the inaugural issue of the GNLD Science News Digest.

The scope and pace of scientific investigations for the knowledge to maximize health, vitality and longevity is greater than ever before. Tapping into that information stream, analyzing its value, and presenting it for the empowerment of all, has always been a high priority for GNLD and the Scientific Advisory Board. The creation of Science News Digest (SND) is the next evolutionary step along this path of empowerment. Its purpose is to assure that you, the members of our Health Professionals Council, have direct and ready access to that stream of up-to-the-minute information from the leading edge of science.

Science News Digest will be published and distributed electronically on a monthly basis. It will cover a wide array of topics from many corners of the scientific, academic and medical communities. Its "digest" format will highlight key findings and annotate them with clear references to facilitate your personal or professional use. Each issue will have a "Focus Topic" that will be delved into more deeply, often citing multiple references, as well as highlight topics that will give a quick look into many diverse but inter-related subjects, conditions, functions or effects.

We look forward to bringing this element of the powerful Science Behind GNLD to you. We ask that you use it as it is intended; to inform, to educate and to empower all who pursue lifelong health and vitality.

Special thanks to SAB Member Dr. David Shepherd for his assistance and support getting this project off the ground.

Warm personal regards,

John Miller
Vice President, Science and Technology
GNLD International®

Carotenoids

Carotenoid Research reaches into new frontiers of understanding and benefit:

As researchers continue to reaffirm the beneficial roles of carotenoids in the well-established arenas of heart health, immune function, vision protection and chemo-prevention, there has been emerging research into areas previously thought to have little potential. The following two studies highlight this new research trend, and disclose more about the great benefits of carotenoids.

Carotenoids and bone health: Protecting women's spines and men's hips.

Published in the January 2009 issue of the American Journal of Clinical Nutrition, researchers from Tufts University and Boston University collected data that demonstrated a direct relationship between dietary carotenoid intake and bone mineral density (BMD). High daily fruit and vegetable intake had been previously connected to bone density preservation. Though carotenoids were thought to play an indirect role in this benefit, this is the first study that supports a direct correlation between carotenoids and bone health. As the global population ages and the occurrence of overweight and obesity become more common, the number of people at risk of osteoporosis and resultant bone fracture steadily increases. Already the lifetime risk of an osteoporotic fracture is 30% to 40% for women and 13% for men. Finding solutions to this escalating health risk is a high priority.

In the 4-year study that tracked the daily dietary carotenoid intake of 213 men and 390 women over age 75, researchers found that carotenoid intake and in particular Lycopene resulted in BMD preservation of the lumbar spine in women and a similar effect for in the hips for men. Total carotenoid intake including Beta-carotene, Lycopene, Lutein and Zeaxanthin was connected to overall BMD retention in the hips as well.

"These results suggest a possible protective effect of carotenoids, particularly Lycopene, against bone loss in older adults" lead research Katherine Tucker stated. "It is therefore possible that carotenoids

explain part of the previously observed protective effects of fruit and vegetable intake and BMD."

--K.L. Tucker, et al. "Inverse association of carotenoid intakes with 4-y change in bone mineral density in elderly men and women: The Framingham Osteoporosis Study." *American Journal of Clinical Nutrition*; Vol. 89 # 1 (Jan. 2009): 416-424.

Carotenoids: Quality of Life and overall mortality reduction.

The World Health Organization tells us that the number of people living with HIV has reached the highest levels in history at 40.3 million. In 2005 about three million people died of HIV/ AIDS-related illness...and more than 500,000 of them were children. Though little is known about the importance of dietary micronutrient intake for HIV/ AIDS sufferers, researchers believe a key understanding of this issue is beginning to emerge.

In the European Journal of Clinical Nutrition, December 2008, Canadian researchers reported that high daily carotenoid intake in supplement form restored serum carotenoid levels and reduced overall mortality in AIDS patients. In such patients, low-serum carotenoids were said to be a predictor of death.

"Today, when ART (Anti-Retroviral Treatment) is expected to be successful in most cases, natural mixed carotenoid supplementation may be a potential low-cost intervention for those with inadequate response to conventional treatment or lacking access to ART," stated Professor D. William Cameron. This does not suggest that carotenoid supplementation is a replacement for

ART, but rather it can serve to boost ART effectiveness. This study further supports previous studies that have shown this similar benefit.

--J Austin, et. al. "A community randomized controlled clinical trial of mixed carotenoids and micronutrient supplementation of patients with acquired immunodeficiency syndrome." *European Journal of Clinical Nutrition*; 60: 1266- 1276 (01 Nov 2006).

Omega-3

Cognitive Performance

Results of a clinical trial published in the Archives of Neurology reported that a daily supplement of 1720 mg DHA and 600 mg EPA showed promise for the slow mental decline in people with very mild Alzheimer's disease, but had no impact on people with more advanced forms.

--Y Freund-Levi, et al. "Omega-3 Fatty Acid Treatment in 174 Patients With Mild to Moderate Alzheimer Disease: OmegaAD Study: A Randomized Double-blind Trial." *Arch Neurol*, Oct 2006; 63: 1402 – 1408

Mood and Behavior

Linked to cognitive performance are reports that supplements of the fatty acids may improve mood and behavior. Several studies have reported that supplementation with EPA and DHA may result in improvements in behavior and learning of children, although such studies have their critics.

In terms of mood, several studies, such as the French study published earlier have reported benefits for omega-3 and symptoms of depression.

--C Féart et al. "Plasma eicosapentaenoic acid is inversely associated with severity of depressive symptomatology in the elderly." *Am. J. Clinical Nutrition*, May 2008; 87: 1156 - 1162.

Moreover, a joint Anglo-Iranian study reported that depression ratings were cut by 50 per cent following daily one gram supplements of EPA, an effect similar to that obtained by the antidepressant drug fluoxetine.

--Jazayeri S, et al. "Comparison of therapeutic effects of omega-3 fatty acid eicosapentaenoic acid and fluoxetine, separately and in combination, in major depressive disorder." *Australian and New Zealand J. of Psychiatry* 42(3):192-198.

Eyes

Looking further afield, the fatty acids may also play a role in maintaining eye health and reducing the risk of conditions such as age-related macular degeneration (AMD), the leading cause of blindness in the over-fifties.

It is known that omega-3 fatty acids, and particularly DHA, play an important role in the layer of nerve cells in the retina, and studies have already reported that omega-3 may protect against the onset of AMD.

--K Conner, et. al. "Increased dietary intake of omega-3 polyunsaturated fatty acids reduces pathological retinal angiogenesis" *Nature Medicine*, Vol 13, July 2007: 868-873.

A study published in the American Journal of Clinical Nutrition, for example, reported that an increased consumption of DHA and EPA may reduce the risk of AMD by about 70 per cent.

--C Augood, et al. "Oily fish consumption, dietary docosahexaenoic acid and eicosapentaenoic acid intakes, and associations with neovascular age-related macular degeneration." *Am. J. Clinical Nutrition*, Aug 2008; 88: 398 - 406.

Mother and child

A key area for many is the role of omega-3 fatty acids in the healthy development of a fetus during pregnancy. Many studies have already reported the necessity of would-be mothers to ensure high intakes of omega-3 fatty acids, and concerns over contaminants and pollutants in fish have promoted supplemental forms.

A recent study from Canada, for example, reported that an increased intake of the omega-3 DHA during pregnancy could produce improved motor function in the offspring in later life. And increased levels were linked to improved visual, cognitive, and motor development in the offspring, report the researchers from Wayne State University School of Medicine, Detroit and Laval University.

--J. Jacobson, et al. "Beneficial Effects of a Polyunsaturated Fatty Acid on Infant Development: Evidence from the Inuit of Arctic Quebec." *The J. of Pediatrics*; Vol. 152, Issue 3 March 2008: 356-364.

Alzheimer's benefits identified.

Increased intake of the omega-3 fatty acid docosahexaenoic acid (DHA) may boost the production of a protein known to destroy the plaques associated with Alzheimer's disease.

--Qiu-Lan Ma, et al. "Omega-3 Fatty Acid Docosahexaenoic Acid Increases SorLA/LR11, a Sorting Protein with Reduced Expression in Sporadic Alzheimer's Disease (AD)." *J. Neurosci.*, Dec 2007; 27: 14299 – 14307.

Omega-3 with high fat meal eases cardiovascular changes.

Consuming the omega-3 eicosapentaenoic acid along with a high fat meal may counter the detrimental effects on arterial stiffness.

--W. Hall, et al. "A High-Fat Meal Enriched with Eicosapentaenoic Acid Reduces Postprandial Arterial Stiffness Measured by Digital Volume Pulse Analysis in Healthy Men." *J. Nutr.* (138) February 2008:287-291

Omega-3

Omega-3 and infant health.

The typical North American diet consisting of large amounts of meat and little fish is deficient in omega-3 fatty acids, posing possible risks to infant neurological development. This study shows the potential of omega-3 supplementation and fortified foods aimed at pregnant and breastfeeding women.

--Sheila M Innis and Russell W Friesen. "Essential n-3 fatty acids in pregnant women and early visual acuity maturation in term infants." *Am. J. Clinical Nutrition*, Mar 2008; 87: 548 - 557.

Lowered colorectal cancer risk.

Regular and long-term consumption of omega-3 fatty acids and oil fish may slash the risk of developing colorectal cancer by 40 per cent. Over an impressive 22 years of study, both omega-3 and fish intake were associated with cancer risk reduction in the colon and rectum.

--M.N. Hall, et al. "A 22-year Prospective Study of Fish, n-3 Fatty Acid Intake, and Colorectal Cancer Risk in Men" 1 May 2008, *Volume 17: 1136-1143*

DHA shows promise against eczema.

Daily supplements of the omega-3 fatty acid docosahexaenoic acid (DHA) may improve symptoms of eczema. Measures of eczema improved by about 23 per cent over eight weeks after consuming the DHA supplements, and this was associated with significant reductions in levels of markers of inflammation.

--C. Koch. "Docosahexaenoic acid (DHA) supplementation in atopic eczema: a randomized, double-blind, controlled trial." *British Journal of Dermatology*; Vol. 158, Issue 4, April 2008: 786-792

Linked to healthy eyes: meta-analysis.

A high intake of omega-3 fatty acids and fish may reduce the risk of age-related macular degeneration (AMD) by up to 38 per cent, suggests a new meta-analysis. Pooling the data from nine studies showed that the benefits were most pronounced against late (more advanced) AMD, while eating fish twice a week was associated with a reduced risk of both early and late AMD.

--E. Chong, et al. "Dietary -3 Fatty Acid and Fish Intake in the Primary Prevention of Age-Related Macular Degeneration: A Systematic Review and Meta-analysis." *Arch Ophthalmol*, Jun 2008; 126: 826 - 833.

Omega-3's and Mental Health.

Brain benefits from regular intake of omega-3 fatty acids may be more pronounced in people with mild cognitive decline than people with mild Alzheimer's. The study adds to a substantial body of evidence linking the use of omega-3 supplements for mental health problems in general, and dementia and Alzheimer's in particular.

--C.C. Chiu. "The effects of omega-3 fatty acids monotherapy in Alzheimer's disease and mild cognitive impairment:." *Progress in Neuro-Psychopharmacology and Biological Psychiatry*. August 2008; 32(6): 1538-1544

Omega-3: Benefits in old age?

Higher levels of omega-3 fatty acids, particularly EPA (eicosapentaenoic acid), may decrease the risk of dementia, and improve survival in older people, suggest three new studies. Two prospective studies from Norway and France measured omega-3 levels using biomarkers and showed positive benefits for the fatty acids in relation to mortality and cognitive function, respectively. However, supplementation of older people with high dose omega-3 does not affect mood or well-being, according to the findings of a third study from the Netherlands.

--M Lindberg, et al. "Long-chain n-3 fatty acids and mortality in elderly patients." *Am. J. Clinical Nutrition*, Sep 2008; 88: 722 - 729

Omega-3 needs of pre-term infants

The requirements of the omega-3 fatty acid DHA may be higher for pre-terms infants than previously thought. The optimal dose of DHA (docosahexaenoic acid) to ensure correct visual development and clarity was one gram – over double that commonly used currently - according to results of a double-blind randomized controlled trial. It is known that the visual outcomes of preterm infants are improved when fed a formula containing between 0.2 and 0.4 per cent (DHA) compared with no supplementation with DHA. However, the optimal dose had not been elucidated. The DHA requirement of preterm infants may be higher than currently provided by preterm formula or human milk.

--Lisa G Smithers, et al. "Higher dose of docosahexaenoic acid in the neonatal period improves visual acuity of preterm infants." *Am. J. Clinical Nutrition*, Oct 2008; 88: 1049 - 1056