



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

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A Compilation of 2009's Top Articles:

Benefits of Fruit and Vegetable Nutrients

- Carotenoids

Why Omega-3 Fatty Acids

Healthy Grain, Soy Nutrients

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Children's Health Needs

Putting it in Perspective

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From the SAB

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Season's Greetings!

We hope this issue of the Science News Digest finds you and yours in the best of spirits and health! 2009 was a great year of exciting and innovative research into the power of nutrition and supplementation for maximizing health, vitality and longevity. This special edition of the SND will highlight all those memorable studies and articles, grouped by topic for ease of use and future reference.

We hope you have found the Science News Digest useful to you out in the field. The purpose of the SND was to be the facilitation of up to the minute scientific information to you, the members of our Health Professionals Council, so you have direct and ready access to a steady stream of information from the leading edge of science. We sought to cover a wide array of topics from many corners of the scientific, academic and medical communities to facilitate your personal and professional use. We hope we have succeeded in providing this to you in the first volume of SND, and look forward to improving and continuing this element of the powerful Science Behind GNLD to you in 2010.

Special thanks all our SAB members their on-going support and contributions to this project.

Happy Holidays and warm personal wishes for a joyous, healthy and prosperous New Year!

Sincerely,

Your Science & Technology Team
GNLD International®

Fruit and Vegetable Nutrients

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 studies highlight this new research trend, and disclose more about the great benefits of carotenoids.

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, November 2006, 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.

Source: 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).

Carotenoids & Bone Health

Protecting women's spines & 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 researcher Katherine Tucker stated. "It is therefore possible that carotenoids explain part of the previously observed protective effects of fruit and vegetable intake and BMD."

Source: 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.



Fruit & Vegetable Nutrients

Carotenoids

Reducing metabolic syndrome risk by 50%

A new study published in the May 2009 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

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.

Fruits and Vegetables

Lymph Cancer Protection?

A new study for the Mayo Clinic found that diets rich in vitamin C, alpha-carotene, and proanthocyanidins were associated with a 22%, 29% and 30% respectively reduced risk of Non-Hodgkins lymphoma. The researchers reported that yellow/orange and cruciferous vegetables, including broccoli offered the greatest reductions in risk.

Data was collected from 35,159 women aged 55 and 69 living in Iowa, USA over 20 years. Intakes of 204 or more servings per month (equivalent to 7 servings/day) of all fruit and vegetables were associated with a 31% reduction in NHL risk compared to those with intakes of less than 104 servings per month. "These results support a role for vegetables and perhaps fruits, and associated antioxidants from food sources, as protective factors against the development of NHL and follicular lymphoma in particular," they concluded.

Source: Kelemen LE, et al. Vegetables, fruit, and antioxidant-related nutrients and risk of non-Hodgkin lymphoma: a National Cancer Institute-Surveillance, Epidemiology, and End Results population-based case-control study. Am J Clin Nutr. 2006 Jun;83(6):1401-10.

Lycopene & Atherosclerosis

Research suggests that the oxidation of LDLs plays an important role in the development of atherosclerosis, or the hardening of the arteries. A recent study from Korea of 264 women found that those with the highest levels of lycopene had the lowest levels of oxidized LDL-cholesterol. The results suggest that serum

Fruit & Vegetable Nutrients

concentrations of lycopene can play an important role in the early stages of atherosclerosis by increasing LDL's resistance to oxidation.

Researchers looked at blood samples of women between the ages of 31 and 75 to measure blood levels of lycopene as well as other carotenoids. The brachial-ankle pulse wave velocity (to measure arterial stiffness) was lowest in those with the highest average lycopene blood levels. The researchers concluded, "This result is in line with previous reports that lycopene showed superior antioxidant capacity or trend of decreased atherosclerotic risk compared with other antioxidants such as beta-carotene both in vitro and in humans."

Source: Yoe HY, et al. Independent inverse relationship between serum lycopene concentration and arterial stiffness. Atherosclerosis, Published online ahead of print, 13 August 2009

Fruit & vegetable antioxidants

To Slow Brain Aging?

According to a research team from Germany, Temple University in the USA and University of Perugia in Italy, the more antioxidant-rich fruits and vegetables in your diet, the greater your chances of keeping a clear, sharp mind in old age.

Their study traced the relationship between fruit and vegetable intake, antioxidant status and cognitive performance in 193 healthy men and women aged 45 to 102. Their conclusion; those who had the highest intake of fruits and vegetables (400 grams or about 14 ounces per day), also had the highest plasma antioxidant levels, the lowest level of free-radical damage and the best cognitive performance than those who consumed the least (less than 100 grams or 3.5 ounces) of fruits and vegetables daily. And this effect was regardless of age, gender, body mass index or education level. The primary health protecting antioxidants science associates with fruit and vegetable intake include carotenoids, polyphenols (flavonoids), vitamins C & E.

Polidori MC, et al. High Fruit and Vegetable Intake is Positively Correlated with Antioxidant Status and Cognitive Performance in Healthy Subjects. J Alzheimers Dis. 2009 Aug. 17(4): 921-927

Heart Benefits of Green Tea

The results of a new study from Japan suggests that the long term consumption of seven cups of green tea a day may reduce the risk of death from colorectal cancer and heart disease by 75%!

Researchers recruited 14,001 elderly residents in Japan, of which 12,251 individuals were evaluated for the various associations between green tea consumption and all-cause mortality, cancer and CVD, and on average, followed-up after 5.2 years.

Compared to people who drank less than one cup per day, drinking seven or more cups of green tea a day was associated with a 55 and 75 percent lower risk of all-cause and CVD mortality, respectively, said the researchers. Furthermore, "green tea consumption was associated with lower risk of colorectal cancer mortality", they said. This data coincides with the recent results of a study from the Chinese University of Hong Kong, which measured the length of telomeres and reported that the cells of tea drinkers may have a younger biological age than the cells of non-drinkers.

Source: Suzuki E, et al. Green tea consumption and mortality among Japanese elderly people: the prospective Shizuoka elderly cohort. Ann Epidemiol. 2009 Oct;19(10):732-9.

Cardiovascular Benefits of Cruciferous Veggies

Atherosclerosis, is a key risk factor for cardiovascular disease, the cause of over 50 per cent of deaths in Europe and the US. A new study for the UK examines the compound sulforaphane, most commonly found in broccoli, which may protect from vascular disease by promoting a natural defense mechanism in the body. Specifically, the compound may be associated with activation of the protective protein Nrf2 in arteries, which have been found to be inactive in areas of arteries that are susceptible to disease and more prone to inflammation.

"[Exposure to] the natural compound sulforaphane reduced inflammation at the high-risk areas by 'switching on' Nrf2," researchers concluded. "These fascinating findings provide a possible mechanism by which eating vegetables protects against heart disease." This research could lead to more targeted approaches to prevent or protect against heart attacks and strokes.

Other benefits of broccoli and cruciferous vegetables, based upon preliminary animal and epidemiological studies, include fewer instances of lung, colon, breast, ovarian and bladder cancer.

Source: Zakkar M. Activation of Nrf2 in endothelial cells protects arteries from exhibiting a proinflammatory state. Arterioscler Thromb Vasc Biol. 2009 Nov;29(11):1851-7. Epub 2009 Sep 3.

Fruit & Vegetable Nutrients

Green Tea and Stress Support

According to data from the World Health Organization, more than 450 million people worldwide suffer from stress, with associated costs estimated at €20bn in Europe (WHO) and \$200bn in the US (International Labor Office). A new study conducted on over 42,093 Japanese individuals, found that drinking five cups of green tea per day could reduce the incidence of psychological distress by as much as 20%. Researchers concluded that "green tea consumption was inversely associated with psychological distress even after adjustment for possible confounding factors." This data coincides with a previous study from Japan which reported that green tea extracts could offset the signs of physical and mental fatigue associated with modern stressful lives.

Source: Hozawa A, et al. Green tea consumption is associated with lower psychological distress in a general population: the Ohsaki Cohort 2006 Study. Am J Clin Nutr. 2009 Nov;90(5):1390-6. Epub 2009 Sep 30.

Pomegranate Prostate Benefits

Pomegranate, rich in the antioxidant punicalagins, has been associated with improved cardio health, joint health, and more recently, prostate cancer protection. Worldwide, half a million men are diagnosed with prostate cancer every year, and it has caused over 200,000 deaths.

Researchers from the University of Mississippi investigating the action of pomegranate juice actives in prostate cancer chemoprevention suggests that the anti-prostate cancer effects may be related to stopping an enzyme in the liver that processes environmental carcinogens.

"It is also well-known that prostate cancer typically possesses long latency periods and develops in older men; therefore, cancer chemoprevention by dietary supplement-based intervention is a desirable form of chemotherapy," wrote the researchers. "Pomegranate juice consumption, thus, may be of considerable advantage in prostate cancer chemoprevention, not only in patients with a genetic predisposition toward prostate cancer but also in patients undergoing cancer therapy."

Source: Kasimsetty SG, et al. Effects of Pomegranate Chemical Constituents/Intestinal Microbial Metabolites on CYP1B1 in 22Rv1 Prostate Cancer Cells. Journal of Agricultural and Food Chemistry, 2009; 57 (22): 10636-10644

Omega-3 Fatty Acids

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.

Source: 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

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.

Source: 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'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

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

Omega-3 Fatty Acids

Supporting Eye Health

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.

Source: 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.

Source: 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.

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

Protecting eyesight into old age

In a recent study from the US National Eye Institute researchers pointed out that increasing omega-3 fatty acid intakes reduced the probability of developing blindness associated with aging by more than 30%. The study, published in the American Journal of Clinical Nutrition* looked at omega-3 fatty acid intake of 1,837 participants

over a period of 12 years related to both "wet" and "dry" age-related macular degeneration (AMD), the leading cause of blindness in people over 50.

It showed that increased intakes of omega-3 fatty acids equated to 35% & 32% risk reduction of wet and dry AMD respectively. This work further substantiated the meta-analysis published in the Archives of Ophthalmology (June 2008) that showed a 38% reduction.

Tuo J, et al. A high omega-3 fatty acid diet reduces retinal lesions in a murine model of macular degeneration. Am J Pathol. 2009 Aug;175(2):799-807.

For 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.

Source: 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.

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.

Source: 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.

Omega-3 Fatty Acids

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.

Source: 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

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

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.

Source: 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.

Source: 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.

More evidence on omega-3 FA and female depression

A new study published in the February 2009 issue of the journal, *Nutrition*, showed that higher intakes of omega-3 fatty acids were associated with an up to 29 per cent reduction in depressive episodes in women.

According to researchers from Feinberg School of Medicine in Chicago, the University of North Carolina at Chapel Hill, and the University of California, San Francisco, women with the highest intake of oily fish reduced their number of depressive moments by 25 per cent, while a high intake of the omega-3 fatty acids EPA and DHA reduced this number by 29 per cent. However, men did not respond in the same as their female counterparts, according to findings.

"Our results are consistent with [...] other epidemiologic studies that have examined the association of fish intake or dietary omega-3 PUFAs with depressive disorders or mental disorders," wrote the researchers. "In addition, several small, randomized, double-blind trials found that adjunctive treatment with omega-3 PUFAs improved depression."

The evidence of the connection between omega-3 status and mood / depression / behavior in adults and children has increased in recent years; including Norway (*Journal of Affective Disorders*), and England and Iran (*Australian and New Zealand Journal of Psychiatry*), have reported positive results.

Source: Murakami K., et al. Dietary intake of folate, other B vitamins, and ω-3 polyunsaturated fatty acids in relation to depressive symptoms in Japanese adults. Nutrition, 2009 Feb; 24(2):140-147

Omega-3 Fatty Acids

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 Omega-3 Fatty Acids significant reductions in levels of markers of inflammation.

Source: 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

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 DHA boost for heart health in high-risk men: Study

The results of the new study, published in this month's *Journal of Nutrition*, reaffirm the anti-inflammatory benefits shown for GNLD Omega-3 Salmon Oil Plus, previously published in the October 2008 *Journal of the American College of Nutrition*. Omega-3 fatty acids, most notably DHA and EPA (eicosapentaenoic acid), have been linked to a wide-range of health benefits, including reduced risk of cardiovascular disease (CVD) and certain cancers, good development of a baby during pregnancy, joint health, and improved behavior and mood.

This latest study, a double-blind, randomized, placebo-controlled parallel trial, showed that supplementation with DHA was positively linked to improving the ratio of inflammatory omega-6 fatty acids to anti-inflammatory omega-3.

Source: Darshan S., et al. DHA Supplementation Decreases Serum C-Reactive Protein and Other Markers of Inflammation in Hypertriglyceridemic Men. J Nutr., 2009;139:495-501.

Omega-3 Deficiency

Linked to 96,000 US deaths per year

The results of a Harvard University study, which looked at 12 dietary, lifestyle and metabolic risk factors found omega-3 deficiency to be the sixth biggest killer of Americans, attributing between 72,000 and 96,000 preventable US deaths per year. This ranks higher than deaths attributed to excess trans fat intake, (63,000-97,000). Of course, it is important to note that chronic diseases and associated deaths are multifactorial and complicating factors that had not been addressed may affect the precision of the study.

However, members of the nutrition community cite this and the many other studies demonstrating the role of omega-3s in health and prevention as reasons for establishing a DRI for EPA and DHA intake.

The study was funded by the Centers for Disease Control and Prevention (CDC) through the Association of Schools of Public Health. It looked at 2005 data from the US National Health Center for Health Statistics and used a mathematical model to determine the number of preventable fatalities. Dr. Andrew Shao, Vice President of scientific and regulatory affairs at the Council for Responsible Nutrition comments: "I think this analysis reinforces the long-held notion that the diet has a tremendously powerful impact on health and longevity and that the consumption of omega-3's (along with fruits and veggies) by Americans is far from adequate."

Source: Danaei G, et al. The preventable causes of death in the United States: comparative risk assessment of dietary, lifestyle, and metabolic risk factors. PLoS Med. 2009 Apr 28;6(4):e1000058. Epub 2009 Apr 28

Omega-3's

May Improve Blood Pressure during Weight Loss

A intervention trial conducted on more than 300 young overweight individuals over a period of 8 weeks by researchers from the University of Iceland, the University of Navarra, University College Cork, and the Portuguese National Research Institute on Agriculture and Fisheries Research in Lisbon suggest that the consumption of fatty fish like salmon or fish oil supplements may reduce blood pressure during energy-restricted diets.

Reduce Dementia Risk

Fish and Omega-3 Intake

A

recent study of 14,960 people from across seven countries indicates that increased fish intake may reduce the risk of dementia by 20%. Researchers looked at data on fish and meat intake in almost 15,000 people aged 65 or older from low- and middle-income countries including China, India, Cuba, the Dominican Republic, Venezuela, Mexico, and Peru. They found a dose-dependent inverse association between dementia and fish consumption, while meat consumption was found to increase dementia risk. They report, "Our results extend findings on the association of fish and meat consumption...and are consistent with mechanistic data on the neuroprotective actions of omega-3 long-chain polyunsaturated fatty acids commonly found in fish."

Source: Albanese E, et al. Dietary fish and meat intake and dementia in Latin America, China, and India: a 10/66 Dementia Research Group population-based study. Am J Clin Nutr. 2009 Aug;90(2):392-400. Epub 2009 Jun 24.

These benefits were especially noticeable in people with initially low levels of DHA in their cell membranes. The participants were recruited from Iceland, Spain and Ireland and were randomly assigned to one of four energy-restricted diets: salmon, cod, fish oil capsule, or control (sunflower oil capsules and no seafood).

Researchers concluded that salmon consumption three times per week can decrease diastolic blood pressure similar to fish oil and significantly more than lean fish during an 8-wk energy restriction in young overweight individuals. A lower DHA content in erythrocyte membrane at baseline, which might identify infrequent fish eaters, is associated with a greater DBP reduction in the course of an 8-wk dietary intervention providing fatty seafood.

Source: Ramel A, et al. Moderate consumption of fatty fish reduces diastolic blood pressure in overweight and obese European young adults during energy restriction. Nutrition. 2009 May 30. [Epub ahead of print]

New Major US Trial-- Funded

Heart and Cancer Benefits of Vit. D and Omega-3s

One of the largest randomized, double-blind, placebo-controlled trials of vitamin D and marine omega-3 is set to begin soon and will run for a period of five years with over 20,000 participants recruited from all over the United States. The National Institutes of Health through the National Cancer Institute and the National Heart, Lung and Blood Institute as well as other agencies will be funding this study, named the "VITAL" trial. Led by researchers at Brigham and Women's Hospital (BWH) in Boston, this trial will examine the impact of vitamin D and omega-3 on the reduction of heart disease and cancer. Participants will include women over 65 and men over 60 without prior history of cancer, heart disease or stroke. They will be randomly assigned to take either one or both of the supplements or placebo.

Researchers hope this study can provide evidence of the effect of these nutrients on health.

For more information: <http://www.vitalstudy.org/>

Omega-3's

500 mg Recommended

A recent review of numerous studies support the intake of at least 500 mg daily of EPA plus DHA in healthy individuals, and up to 1,000 mg for people with heart disease or heart failure. These recommendations for healthy people are double the levels recommended by the European Food Safety Authority's (EFSA) Panel on Dietetic Products, Nutrition and Allergies (NDA). Lead author C. Lavie wrote "We now have tremendous and compelling evidence from very large studies, some dating back 20 and 30 years, that demonstrate the protective benefits of omega-3 fish oil in multiple aspects of preventative cardiology." The most compelling data came from four randomized controlled trials with EPA and DHA which involved around 40,000 participants.

Source: Lavie CJ, et al. Omega-3 polyunsaturated fatty acids and cardiovascular diseases. J Am Coll Cardiol. 2009 Aug 11;54(7):585-94.

Grain, Soy Nutrients

No Effect of Soy on Testosterone

Researchers from the University of Minnesota, USA conducted a meta-analysis of 15 studies to examine the effect of soy proteins or isoflavones on male hormones. Soy has been associated with many health benefits and has been received as a healthy source of protein. However, there have been some studies suggesting that soy isoflavones could affect male testosterone levels due to its similarity in chemical structure to estrogen. However, the authors determined that for all these studies, soy protein and isoflavone intake “greatly exceeded” typical Japanese dietary intake.

They concluded that “These results suggest that the consumption of soy foods or isoflavone supplements would not result in the adverse effects associated with lower [testosterone] levels.”

Source: Hamilton-Reeves J, et al. M Clinical studies show no effects of soy protein or isoflavones on reproductive hormones in men: results of a meta-analysis. Fertil Steril. 2009 Jun 11. [Epub ahead of print]

Soy Isoflavones

Bone Health

According to the World Health Organization, osteoporosis is one of the biggest global healthcare problems. In fact, the National Osteoporosis Foundation in the USA reported that by 2010, about 12 million people over the age of 50 are expected to have osteoporosis and another 40 million to have low bone mass.

In a recent randomized, double-blind, placebo-controlled study published in the American Journal of Clinical Nutrition, over 400 postmenopausal women experienced a significant reduction in the loss of whole body bone mineral density (BMD) after supplementation with soy-germ derived isoflavones. This coincides with previous data that demonstrated the association between soy isoflavones to increases in BMD, and the recent large study in the Archives of Internal Medicine (2005, Vol. 165, pp. 1890-1895) that found a 48% decrease in fractures for menopausal women with high soy consumption.

Wong WW, et al. Soy isoflavone supplementation and bone mineral density in menopausal women: a 2-y multicenter clinical trial. Am J Clin Nutr. 2009 Nov;90(5):1433-9. Epub 2009 Sep 16.

Heart Healthy Whole Grains

New research from Italy suggests that consumption of whole meal wheat foods may be associated with improving total and ‘bad’ cholesterol levels. The findings demonstrated a 4.5% reduction for both cholesterol measures following the consumption of whole meal wheat products for three weeks compared to the consumption of refined grains. There were 15 participants in the study, with an average age of 54.5 and an average BMI of 27.4 kg/m². The interventions lasted three weeks, followed by two weeks of ‘washout’ and then crossing over to the other intervention. The results of the trial demonstrated a reduction in total and LDL cholesterol levels, 4.3 and 4.9 percent lower. There were no reported changes in blood or fat metabolism, antioxidant activity, levels of magnesium or measures of incretins, adipokines or hs-CRP.

Source: Giacco R, et al. Effects of the regular consumption of wholemeal wheat foods on cardiovascular risk factors in healthy people. Nutr Metab Cardiovasc Dis. 2009 Jun 5. [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.

Grain, Soy Nutrients

Soy—Lung Benefits?

(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*, 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.

Results published in the journal *Respiratory Research* on a case-control study of 278 Japanese patients diagnosed with lung disease (chronic obstructive pulmonary disease) found that the consumption of soy products was positively correlated with lung function and inversely associated with the risk of lung disease and breathlessness. Another 340 participants recruited from the general Japanese population were used as a control group.

Source: Hirayama F, et al. Soy consumption and risk of COPD and respiratory symptoms: a case-control study in Japan. Respir Res. 2009 Jun 26;10(1):56. [Epub ahead of print]

Vitamins & Minerals

Vitamin-D protects cognitive capacity:

Publishing in the December 2008 issue of the *Journal of Geriatric Psychology and Neurology*, researchers at the Peninsula Medical School, the University of Cambridge and the University of Michigan revealed that vitamin-D status was associated with cognitive function in the elderly. Data from 1766 subjects (708 males and 1058 females) over 65 years of age showed that those with the lowest levels of vitamin-D (as serum 25(OH) D) were twice as likely to suffer cognitive impairment compared to those with “optimum” levels. Though they could not claim that low vitamin-D caused the cognitive impairment, they noted that their findings add to the accumulating data supporting “previously unsuspected roles for vitamin D in brain development and neuroprotection”.

Source: Llewellyn DJ, Langa K, Lang I. Serum 25-Hydroxyvitamin D Concentration and Cognitive Impairment. J Geriatr Psychiatry Neurol. 2008 Dec 10.

Vitamin C may improve blood pressure: Study

Vitamin C may be an important regulator in blood pressure. A recent study found that among a group of young women with normal blood pressure, those with the highest levels of vitamin C had lower systolic and diastolic blood pressure than those with the lowest vitamin C levels.

The cohort of 242 healthy young women age 18-21 years had plasma ascorbic acid levels ranging from 0.22 to 3.13 mg/dL. Researchers determined that a 1 mg/dL increase in plasma ascorbic acid levels was associated with 4.1 mmHg lower systolic blood pressure and 4.0 mmHg lower diastolic blood pressure.

“The findings suggest the possibility that vitamin C may influence blood pressure in healthy young adults.

Vitamins & Minerals

Since lower BP in young adulthood may lead to lower BP and decreased incidence of age-associated vascular events in older adults, further investigation of treatment effects of vitamin C on BP regulation in young adults is warranted.”

Source: Block, Gladys, et. al. Vitamin C in plasma is inversely related to blood pressure and change in blood pressure during the previous year in young Black and White women. Nutrition Journal. Dec 2008: 7-35

Low selenium levels may increase anemia risk

Selenium has been found to be involved in antioxidant activity to protect hemoglobin against oxidation. According to a new study published in the European Journal of Clinical Nutrition, low levels of the mineral selenium may increase the risk of anemia in older people. Researchers found that adults with the lowest selenium levels were 11.4 per cent more likely to have anemia, compared to subjects with the highest levels.

Lead author Richard Semba comments: “This study raises a potentially important public health question: Has selenium deficiency been overlooked as a cause of anemia among older adults? This study may represent a first important step toward determining whether selenium deficiency is a potential cause of anemia among older adults.”

Source: R.D. Semba, M.O. Ricks, L. Ferrucci, Q.-L. Xue, J.M. Guralnik, L.P. Fried. Low serum selenium is associated with anemia among older adults in the United States. European Journal of Clinical Nutrition. 2009, vol 63: 93-99

Higher vitamin C linked to lower gout risk

The most prevalent inflammatory arthritis in adult males, present in nearly half to one extent or another is gout. New research published in the *Archives of Internal Medicine*, showed that for every 500 milligrams increase in vitamin C intake, a man’s risk of gout was cut by 17 per cent. For men taking at least 1,500 mg daily gout risk was cut by 45%. The finding came from a prospective study conducted by researchers from Boston University School of Medicine on 46,994 men.

“The present study, to our knowledge, provides the first prospective evidence about the inverse association between vitamin C intake and risk of gout,” wrote the researchers, led by Hyon Choi.

Gout is a disease caused by a disturbance in uric acid metabolism. During a gout attack the body uses uric acid to form painful urate crystals. According to the US National Institute of Arthritis and Musculoskeletal and Skin Diseases, gout occurs in 8.4 of every 1,000 people and is most prevalent in men over the age of 40.

Source: Choi H, et al. Vitamin C intake and the risk of gout in men: a prospective study. Arch Intern Med, 2009; 169: 502-507.

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

Vitamins & Minerals

B-vitamins

Reduce migraine frequency, severity & 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]

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.

Multivitamins and Heart Health

According to the National Institutes of Health State-of-the-Science Panel, half of the American population uses dietary supplements regularly, and with good reason. Researchers analyzed data from 77,719 Washington State residents between the ages of 50 and 76 and looked at multivitamins, vitamins C and E supplement use over a 10 year period. This study published in the American Journal of Epidemiology found that the consumption of a multivitamin could reduce heart disease death risk by 16%. They also found that intakes of 215 mg of vitamin E per day for ten years was associated with a 28% decrease in the risk of death from CVD.

Source: Pocobelli G, et al. Use of supplements of multivitamins, vitamin C, and vitamin E in relation to mortality. *Am J Epidemiol*. 2009 Aug 15;170(4):472-83. Epub 2009 Jul 13.

Vitamin D

To Support Cancer Health

In Europe, there are 363,000 new cases of colorectal cancer every year in Europe, and around 945,000 cases globally, with 493,00 deaths each year. A recent study from Harvard researchers found that a higher blood level of vitamin D is associated with doubling the survival rate of patients with colorectal cancer. There was an overall lower rate of mortality by 40% in people with the highest levels of the vitamin. This meta-analysis looked at data from 1,017 previously diagnosed participants in the Nurses’ Health Study and Health Professionals Follow-Up Study, and adds to the body of research suggesting the potential benefits for vitamin D for colorectal health.

Ng K, et al. Prospective study of predictors of vitamin D status and survival in patients with colorectal cancer. *Brit J of Cancer*. 2009 Sep. 101:916-923.

Vitamins & Minerals

Three Studies Reinforce the Important Role of Vitamins

From the Council for Responsible Nutrition
WASHINGTON, D.C.

Three new studies recently published in the *Archives of Internal Medicine*, a publication from the *Journal of the American Medical Association* (JAMA), further reinforce the varying and important roles that vitamins can play as part of a healthy lifestyle.

The first study suggests that women with higher intakes of calcium from both food and supplements—up to 1,300 milligrams (mg)/day—appear to have a lower risk of cancer overall, and both men and women with high calcium intakes have lower risks of colorectal cancer and other cancers of the digestive system. A second study showed that women who took a combination of B vitamins, including folic acid (2.5 mg/day), pyridoxine hydrochloride (vitamin B6, 50 mg/day) and cyanocobalamin (vitamin B12, 1 mg/day), decreased their risk of age-related macular degeneration (AMD), the leading cause of severe irreversible vision loss for older Americans. The third study suggests that higher blood levels of vitamin D are inversely associated with the incidence of upper respiratory tract infections.

“These results are encouraging and may lead us in new directions of research,” said Andrew Shao, Ph.D., Vice President, Scientific and Regulatory Affairs, for the Council for Responsible Nutrition (CRN). “We’ve known for many years that these essential nutrients play important roles in health—vitamin D and calcium for bone health and folic acid for the prevention of neural tube birth defects—but these latest studies suggest new and exciting benefits that need further exploration.”

➔ Calcium and Cancer

Previous observational studies have shown an inconsistent relationship between calcium intake and cancer. This large prospective study, part of the National Institutes of Health (NIH) AARP Diet and Health Study, followed 293,907 men and 198,903 women, age 50 to 71. Participants were given a food frequency questionnaire when they enrolled in the study, asking how much and how often they consumed dairy, as well as other conventional foods, and

whether they took supplements. After seven years of follow-up, the study found that women with a calcium intake of up to 1,300 mg/day, from a combination of conventional foods and supplements, had a decreased risk of total cancer. The study also found that women who were in the top one-fifth of calcium consumption (1,881 mg/day from a combination of conventional food and supplements) had a 23 percent lower risk of digestive types of cancer, particularly colorectal cancer, than those in the bottom one-fifth (494 mg/day). Men who consumed the most calcium from conventional foods and supplements (about 1,530 mg/day) also had a 16 percent lower risk of digestive types of cancer than those who consumed the least calcium.

“What this means for consumers is that there may be benefits to calcium supplementation that go beyond bone health; but more research is still needed to help explain the observed differences in gender and to better assess the effects on other non-digestive cancers,” said Dr. Shao. “It’s also interesting to point out that the women in this study who had the highest calcium intakes—and lower risks of cancer—had lower body mass indexes, tended to be physically active, and were less likely to smoke cigarettes or drink alcohol. This further reinforces the notion that good health is truly a combination of overall healthy practices—and vitamins and other supplements are an important part of that formula.”

Source: Park Y, Leitzmann M, Subar A, et al. Dairy Food, Calcium and Risk of Cancer in the NIH-AARP Diet and Health Study. Archives of Internal Medicine, 2009; 169 (4):391-401.

➔ B Vitamins and Age-Related Macular Degeneration

Previous observational studies have suggested an association between lower homocysteine concentrations in the blood and lower risk of age-related macular degeneration (AMD), while intervention studies have shown that folic acid, vitamin B6 and vitamin B12 may lower homocysteine levels. But no intervention study had yet examined the effect of B vitamin supplementation on AMD risk.

Vitamins & Minerals

This randomized, double-blind, placebo-controlled trial, part of the Women's Antioxidant and Folic Acid Cardiovascular Study (WAFACS), followed 5,442 female healthcare professionals, age 40 years or older, who already had or were at high risk for heart disease for a little more than seven years. Participants were assigned to receive a placebo or a combination of folic acid (2.5 mg/day), vitamin B6 (50 mg/day) and vitamin B12 (1 mg/day). After just two years, the beneficial effects of those women taking B vitamins emerged and persisted throughout the entire trial. After 7.3 years of follow-up, women taking the supplements had a 34 percent lower risk of any AMD and a 41 percent lower risk of visually significant AMD.

"This is very promising news for the millions of older Americans who may be at risk for age-related macular degeneration," said Dr. Shao. "Currently, there are very few treatment options available for AMD, so prevention is key. The results of this study suggest that B vitamins could be combined with other supplemental nutrients including the antioxidants, vitamins C and E and carotenoids beta-carotene and lutein, which have also been shown to lower the risk of AMD. These supplements in turn, can be added to other preventive measures, including avoiding smoking and excessive sun exposure to provide even further protection."

Source: Christen W, et al. Folic Acid, Pyridoxine, and Cyanocobalamin Combination Treatment and Age-Related Macular Degeneration in Women: The Women's Antioxidant and Folic Acid Cardiovascular Study. Archives of Internal Medicine, 2009; 169 (4):335-341

➔ Vitamin D and Upper Respiratory Tract Infections

In recent years, vitamin D inadequacy has reemerged, resulting in the resurfacing of diseases such as rickets in children. According to the Dietary Guidelines for Americans 2005, "Older adults, people with dark skin, and people exposed to insufficient ultraviolet band radiation (i.e., sunlight) should consume extra vitamin D from vitamin D-fortified foods and/or supplements." In a secondary analysis of the Third National Health and Nutrition Examination Survey (NHANES), a survey of the U.S. population, found that individuals with low blood levels of a vitamin D marker (25-hydroxyvitamin D) were also more likely to have an upper respiratory tract infection (URTI). Specifically, the analysis found that compared to those with levels greater than 30 nanograms/milliliter (ng/ml), individuals with less than 10 ng/ml had a 36 percent higher risk of having a recent

URTI; those with 10 to less than 30 ng/ml had 24 percent higher odds.

"The evidence supporting the benefits of vitamin D continues to build," said Dr. Shao. "The majority of Americans continue to fall short in getting adequate amounts of vitamin D through diet alone. Given that vitamin D is relatively low in most foods, and there are serious risks associated with excessive sun exposure, dietary supplements are an important alternative to achieving a sufficient intake. While this study on its own does not mean that higher vitamin D intake will ensure that you don't get an upper respiratory tract infection this winter, it is consistent with, and adds to, the relatively new body of evidence showing that vitamin D plays a critical role in immune function."

Says Dr. Shao, "The bottom line for consumers is that vitamins are an important component of good health. Science is an evolving process, and this recent good news about vitamins should certainly be encouraging to consumers, particularly those who take them consistently over the long-term in combination with other healthy habits."

Source: Ginde A, Mansbach J, Camargo C. Association Between Serum 25-Hydroxyvitamin D Level and Upper Respiratory Tract Infection in the Third National Health and Nutrition Examination Survey. Archives of Internal Medicine, 2009; 169 (4):384-390.

Zinc and DNA Protection

Published in the August 2009 American Journal of Clinical Nutrition is the first human study to directly examine the correlation between zinc intake and DNA damage in healthy adult males. This study was conducted on 9 healthy men with reported zinc intakes of 11mg/day. Over the course of 83 days, the participants underwent periods of zinc depletion (0.6 mg zinc/day for 1 week, then 4 mg zinc/day for 5 weeks) and zinc repletion (11 mg zinc/day for 4 weeks with 20 mg supplemental zinc for the first 7 days) to examine the effects of varying levels of zinc intake. Blood samples were analyzed for DNA damage in peripheral blood cells, plasma oxidative stress, and antioxidant defense biomarkers.

Researchers confirmed that dietary zinc depletion was significantly associated with increased DNA breakage and the repletion of zinc reversed the observed DNA weakness. This data reaffirms the importance of dietary zinc intake for healthy DNA function.

Song Y, et al. Dietary zinc restriction and repletion affects DNA integrity in healthy men. Am J Clin Nutr. 2009 Aug;90(2):321-8

Vitamins & Minerals

Not Enough D for Mothers-to-be

A new study from Northern Ireland suggest that many mothers are not getting enough vitamin D, suggesting that current recommendations may be insufficient. The researchers recruited 99 pregnant women at 12, 20 and 35 weeks of gestation, and 38 non-pregnant controls living at a latitude of 54 to 55 °N. S, and found that 96, 96 and 75 per cent respectively were vitamin D insufficient, and 35, 44, and 16 per cent were vitamin D deficient. Children born to vitamin D- deficient mothers are at an increased risk of rickets, while mothers may experience a detrimental effect on bone build-up, increased risk of type-1 diabetes and asthma. Researchers concluded that “Given the potential consequences of hypovitaminosis D on health outcomes, vitamin D supplementation, perhaps at higher doses than currently available, is needed to improve maternal vitamin D nutrition.” This data supports the on-going debate regarding increasing the recommended amounts of vitamin D intake.

Source: Holmes VA, et al. Vitamin D deficiency and insufficiency in pregnant women: a longitudinal study. Br J Nutr. 2009 Sep;102(6):876-81.

Rates of Survival in Elderly

Emerging science continues to validate the importance of supplementation with Vitamin D. A recent study published in the journal *Clinical Endocrinology* reported that low blood levels of vitamin D have again been linked to lower rates of survival in the elderly, in all-cause mortality and mortality from heart disease. The data was accumulated from 614 people and found that those with the lowest average vitamin D levels (30.6 nanomoles per litre) were found to be at a 124 and 378 per cent increased risk of all-cause mortality and cardiovascular mortality, respectively.

The results of this study coincide with similar findings published in *Nutrition Research* by scientists at the Johns Hopkins University and a study published in the *Archives of Internal Medicine*. Researchers have proposed mechanisms that range from controlling inflammatory compounds, regulating immune health and blood pressure, to reducing arterial hardening. Research also suggests that vitamin D may also protect against cancer, infections, autoimmune and vascular diseases.

Pilz S, et al. Vitamin D and mortality in older men and women. Clin Endocrinol (Oxf). 2009 Nov;71(5):666-72. Epub 2009 Feb 18.

Cardiologist Recommended Lifestyle Habits for Healthy Hearts

Diet, Supplements & Exercise

*Issued from the Council for Responsible Nutrition
WASHINGTON, D.C., FEBRUARY 3, 2009 –*

Traditionally, eating a nutritious diet and exercising regularly are perceived as the two pillars of heart health. However, a new study shows that nearly three-quarters of US cardiologists would add another recommendation: taking dietary supplements.

In fact, 73 percent of cardiologists believe this regimen—healthy diet + vitamins and other supplements + exercise—is essential for a healthy heart, according to new research from the “Life...supplemented” Healthcare Professionals (HCP) Impact Study. The study also showed that 72 percent of US cardiologists recommend dietary supplements to their patients, and more than half (57 percent) take supplements themselves, with the most popular being multivitamins, omega-3/fish oils and vitamin C.

“Dietary supplements play an important role in a well-balanced health regimen, filling nutritional gaps and helping to promote overall health,” says William Cooper, M.D., medical director of cardiovascular surgery at WellStar Kennestone Hospital, assistant professor of cardiothoracic surgery at Emory University and advisor to the “Life...supplemented” campaign. “For those at high risk for heart disease, there's evidence that consistent use of certain supplements may help as part of a preventative program.”

For example, Dr. Cooper points to the benefits of omega-3 fatty acid/fish oil supplements to help reduce inflammation, lower triglyceride levels and contribute to a healthy heart. He also recommends multivitamins, noting that the first step to heart health is maintaining overall health, and is a strong advocate of the benefits of fiber and phytosterol supplements for cholesterol-lowering effects.

Other supplements to consider for heart health include antioxidants, like vitamins C and E, B vitamins, coenzyme Q10, calcium, potassium and magnesium.

A healthy diet complemented by appropriate vitamins, minerals and other supplements is part of a long-term effective solution. In fact, 54 percent of cardiologists believe dietary supplements can play an important role in improving or maintaining the health of their patients.

If all this information sounds confusing, don't be afraid to ask a doctor for guidance. Sixty-two percent of cardiologists agree that one of their roles as a healthcare professional is to provide information to patients on dietary supplements. The ones they are most often asked about include omega-3/fish oil (80 percent), coenzyme Q10 (58 percent), vitamin E (39 percent), multivitamins (36 percent), and glucosamine and/or chondroitin (35 percent).

While a well-balanced wellness regimen that includes a healthy diet, vitamins and regular exercise is the foundation for long-term health, there are other steps you can add to help protect your heart:

- ➔ *Talk to your doctor; don't be afraid to ask questions. Form a partnership with your physician to set realistic goals for your blood pressure and cholesterol levels.*
- ➔ *Engage in stress-reducing behaviors, such as yoga, meditation and massages, and be sure to get a good night's sleep on a regular basis.*
- ➔ *Don't smoke. Research concludes that smoking is not good for your health or your heart.*

Methodology: Results from the 2008 "Life...supplemented" HCP Impact Study went public in November 2008 and comprise three separate surveys – 300 cardiologists, 300 dermatologists and 300 orthopedic specialists. Margins of sampling error at a 95 percent confidence level are +/- 5.7 percentage points for each of the specialty groups of healthcare professionals surveyed (dermatologists, cardiologists and orthopedic specialists). A nominal honorarium was given to each healthcare professional completing the survey.

Healthiest kids most likely to be supplement users

A large number of U.S. children and teens age 2 to 17 use vitamin and mineral supplements according to a report in the February 2009 issue of Archives of Pediatrics & Adolescent Medicine, and the healthiest are the most frequent supplement users.

The study is based on analysis of data from 10,828 children age 2 to 17 who participated in the 1999 to 2004 National Health and Nutrition Examination Survey. As part of the study, parents filled out questionnaires and participated in household interviews, and children and teens underwent medical examinations.

The researchers found that approximately 34 percent of the children and adolescents had used vitamin and mineral supplements in the past month, with underweight children having greater intakes. "Our results supported our hypothesis that underweight children would have the highest use of vitamin and mineral supplements," the authors write. "However, in contrast to what we expected to find, children and adolescents with healthier nutrition, more active lifestyles, greater food security and greater health care access were more likely to use vitamin and mineral supplements."

"It comes as no surprise that those individuals who use vitamin and mineral supplements also engage in other healthy behaviors, such as trying to eat a well-balanced diet and being physically active" stated Douglas MacKay, N.D., vice president, scientific and regulatory affairs, US Council for Responsible Nutrition. "Studies show that healthy individuals tend to engage in many healthy habits—not just one healthy habit—but an overall approach to wellness. Vitamin supplements are one component of a total health package and cannot be teased out of the overall wellness equation."

Though this study reaffirms the fact that our healthiest populations include dietary supplementation as part of their wellness strategy it also underscores a situation that is well known and understood within health care communities; that too often those children that have the greatest need for the healthful, abundant nutrition provided by a supplemented diet (including those poor eating and exercise habits, greater obesity, lower income and food security, poorer health and less access to health care) are those least likely to get them.

"Such supplements contribute significantly to total dietary intakes of vitamins and minerals, and studies of nutrition should include their assessment," the authors conclude. "Since vitamin and mineral supplement users report greater health care access, health care providers may be in a position to provide screening and counseling regarding dietary adequacy and indications for supplement use."

Source: *Ulfat Shaikh, et al. Vitamin and Mineral Supplement Use by Children and Adolescents in the 1999-2004 National Health and Nutrition Examination Survey: Relationship with Nutrition, Food Security, Physical Activity, and Health Care Access. Arch Pediatr Adolesc Med, Feb 2009; 163: 150 – 157*

Omega-3 fatty acids:

Kids need them but are not getting them

The importance of omega-3 fatty acids to the health of children has seen an explosion of awareness among researchers and medical professionals alike. Evidence published in the March 2009 issue of the *Journal of Nutrition* found that many young people are not getting the amount of omega-3 fatty acids they need.

The American Dietetic Association and their Canadian counterparts, Dietitians of Canada recommend a minimum daily intake of 351 mg. Based on this recommendation, 90% of the children in the study were deficient in omega-3 EPA/DHA. The U.S. Department of Health and Human Services indicate that in the U.S., the average consumption of omega-3 EPA/DHA for children 4-8-years of age is only 50mg/day. Therefore, although the study only involved Canadian children, American children are also well below the recommended levels.

The use of omega-3 fatty acids in the body begins at conception and is carried forward through all stages of life. Omega-3's from mom is essential for full and healthy development, particularly for the brain and central nervous system. From birth to the age of three, DHA is involved in the development of the brain and eyes. Thereafter, both EPA and DHA are required for healthy cognitive function. There is growing evidence that dietary omega-3 insufficiency directly contributes to behavior and learning disorders, including Attention Deficit Hyperactivity Disorder (ADHD) and

Developmental Coordination Disorder (DCD). Other research has connected omega-3 deficiency with inflammatory conditions such as asthma, childhood depression, and increased the risk of type 1 diabetes.

Source: *Madden SM, et al. Direct Diet Quantification Indicates Low Intakes of (n-3) Fatty Acids in Children 4 to 8 years old. J. Nutr. 2009 Mar; 139: 528-532.*

Fruit and Vegetables:

Are our children suffering?

In the March issue of the *Journal of the American Dietetic Association* researchers showed once again that though they are important throughout life, we simply do not eat enough fruits and vegetables of color and are thus deficient when it comes to intake of the powerful phytonutrients they provide.

Using data from the 1999-2002 National Health and Nutrition Examination Survey, researchers showed that only 8% of vegetables consumed by children in all groups were the most nutrient dense dark green or orange. Unfortunately, they found that the most commonly consumed vegetables are the nutrient poor, high-calorie fried potatoes, accounting for about 46% of total vegetable consumption.

Source: *Befort C., et al. Fruit, Vegetable, and Fat Intake among Non-Hispanic Black and Non-Hispanic White Adolescents: Associations with Home Availability and Food Consumption Settings. J Am Diet Assoc, 2009 Mar; 106(3): 367-373*

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 tumors 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*

Probiotics

Reducing eczema risk in infants?

The results of a study conducted in the Netherlands, which was published in the *European Journal of Allergy and Clinical Immunology*, suggest that daily supplements of multi-bacterial strain food may reduce the risk of eczema by 58% during the first three months of life.

The researchers recruited 157 pregnant women and randomly assigned them to receive the strain mixture or placebo for the first two weeks of pregnancy. Infants then received the supplements for their first year of life. The Dutch researchers found that parental-reported eczema was 58% lower in the intervention group.

Source: Niers L, et al. *The effects of selected probiotic strains on the development of eczema (the Panda study)*. *Allergy*. 2009 Apr 9. [Epub ahead of print]

Probiotics--

Reducing Kid's Flu Symptoms?

According to recent findings supplementation with probiotics *Lactobacillus acidophilus* and *Bifidobacterium animalis* was associated with a 73% reduction in fever incidence, a 59% reduced occurrence of runny noses, and 62% drop in coughing incidences. The study, conducted by researchers at Tongji University (Shanghai), the University of Texas at Houston, and Sprim USA (Frisco) demonstrates "a trend for a broader protective effect with the combination [of strains]". Supplementation with *L. acidophilus* alone produced only 53%, 41%, and 28% decreases in the symptoms respectively.

The study recruited 326 children (ages 3-5) from a child care center in China. They were randomly assigned to the single *L. acidophilus* strain, the combination of the strains, or a placebo. Supplements were given twice daily for six months. This was the first study to demonstrate more significant results with a combination of strains instead of a single strain preparation of probiotics. Researchers speculate that the mechanism is an "immune-enhancing effect...their ability to modulate immune responses through interactions with toll-like receptors" and the ability of the strains to stimulate dendritic cells.

Source: Leyer GJ, et al. *Probiotic effects on cold and influenza-like symptom incidence and duration in children*. *Pediatrics*. 2009 Aug;124(2):e172-9. Epub 2009 Jul 27. Epub 2009 Apr 28

Did You Know?

- Children eat nearly twice as many calories (770) at restaurants as they do during a meal at home (420)
- Children who consume fast food have higher intakes of fat, saturated fat, cholesterol and sodium – and lower intakes of fiber, calcium, and iron – than those children who do not eat fast food
- Consumption of milk – the largest dietary source of calcium has decreased 36% among adolescent girls
- The American Academy of Pediatrics recently doubled its daily vitamin D intake recommendations for babies, children and adolescents, and recommends supplementation because most children do not get enough from diet alone
- Children who eat breakfast perform better at school, yet many children skip breakfast
- Half of youngsters aren't meeting the recommended intake for calcium; two-thirds are falling short on vitamin E and zinc; and almost one-third aren't getting the iron they need from their diets, according to research from the USDA (United States Department of Agriculture).

Vitamin D for Girl Power

A new study from the UK investigated the correlation between vitamin D levels and 99 girls between the ages of 12 and 14. These researchers from the University of Manchester found that "vitamin D is positively related to muscle power, force, velocity and jump height in adolescent girls." The girls were recruited from an inner city, multi-ethnic school in Manchester. Blood samples were collected and although none of the girls had any physical symptoms of vitamin D deficiency, 75% of them had low vitamin D levels. Using a technique called jumping mechanography to measure the subjects' power and force, the researchers found that girls without vitamin D deficiency performed significantly better. The researchers concluded, "These data highlight the importance of vitamin D status on muscle formation in adolescent girls. Sub-optimal force might have implications for long-term bone development."

Source: Ward KA, et al. *Vitamin D status and muscle function in post-menarchal adolescent girls*. *J Clin Endocrinol Metab*. 2009 Feb;94(2):559-63. Epub 2008 Nov 25.

Chronic Disease: Putting it all in Perspective

The grave reality of the global health crisis

was brought to our attention by the 2005 World Health Organization (WHO) report, "Preventing Chronic Diseases: A Vital Investment". WHO's alarming data projects deaths from chronic diseases to increase from 35 million to 41 million by 2015, a 17% increase in just 10 years! In addition, the world's populations will experience 50% more new cases of cancer in 15 years and a 114% increase in diabetes in just 25 years!

Though these growth rates are astounding on their own, when compared against global population growth projects, their true impact on the looming health disaster becomes even more apparent.

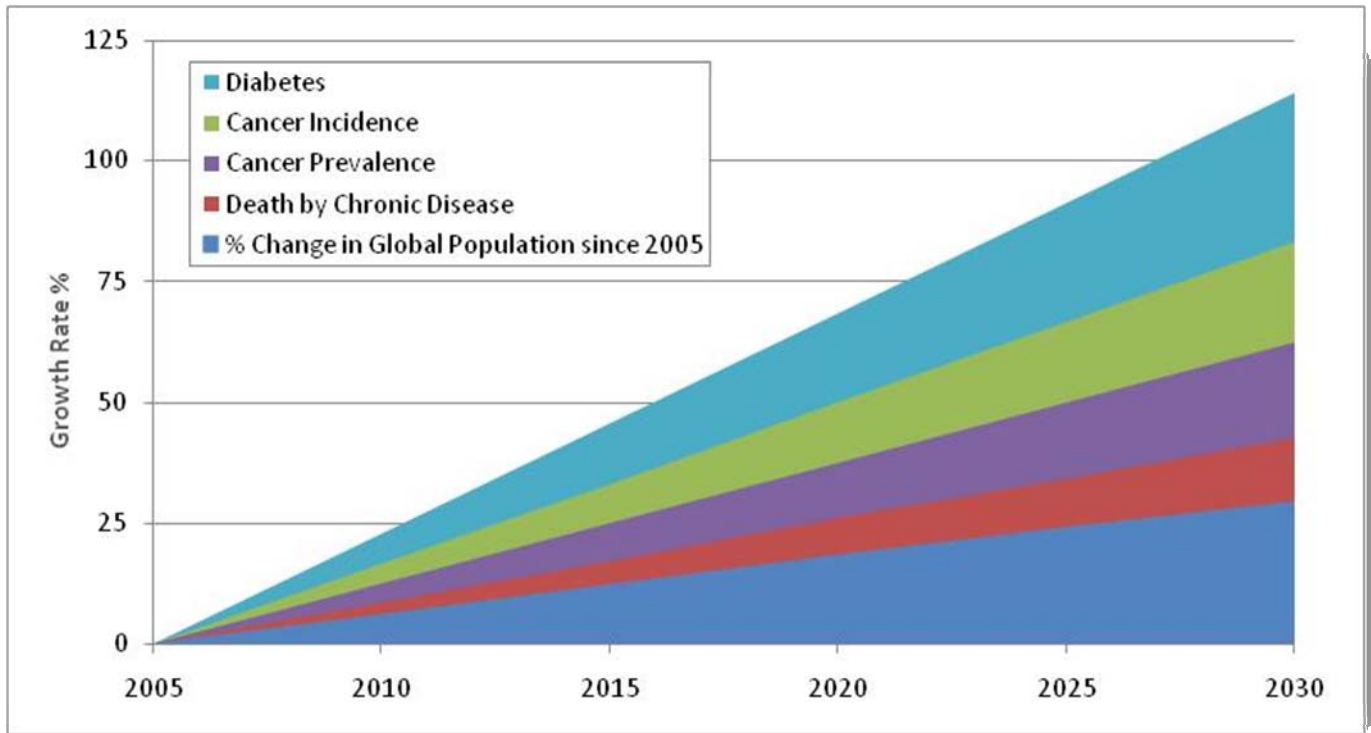
The chart below demonstrates that cancer prevalence, cancer incidence and diabetes occurrence rates will far exceed population growth rate by factors of 3 or 4 to 1.

The alarming growth rate of chronic disease and deaths as a result of chronic disease projected by this data further substantiates the reality of the global health crisis and the urgent need for action to do something about it.

- Between 2005 and 2015: chronic disease is expected to **increase by 17%**
- Between 2005 and 2020, there will be **50% more new cases of cancer**
- Between 2005 and 2025, cancer prevalence will **increase by 50%**
- Between 2005 and 2030, diabetes will **increase by 114%**

Projected Chronic Disease Growth Trends

**From data reported in the WHO 2005 report, "Preventing Chronic Disease"*



Obesity Rates

Continue to Increase in the U.S.

The Trust for America's Health and the Robert Wood Johnson Foundation recently released a report entitled 'F as in Fat: How Obesity Policies are failing in America 2009,' which found that American obesity rates have increased in 23 states over the past year and decreased in none.

The US Department of Health and Human Services (HHS) had set a goal to reduce obesity rates to 15% in every state before 2010, but the data in the report seems to suggest that the trend is moving the other way.

In 1980, the average US obesity rate was 15%. Now, the average is 34.4%, and another 32.7% are overweight. Even more alarming are the obesity/overweight rates among children, which have climbed to more than 30%.

Among other recommendations, the report suggests that the federal government should "work with industry to eliminate junk food advertising to children" and that states should "evaluate current snack taxes."

Source: Trust for America's Health, The Robert Wood Johnson Foundation. F as in fat. How obesity policies are failing in America. Washington (DC): Trust for America's Health; 2009. <http://healthyamericans.org/reports/obesity2009/Obesity2009Report.pdf>. Accessed July, 2009.

Processed Foods Affect Mood

The results of recent study that examined data provided by 3486 participants (average age of 55 years) in London found that those reporting a high consumption of processed foods were more likely to experience depression in middle age than those with the highest intake of whole foods such as fruits, vegetables and fish. The processed foods they looked at included processed meats, chocolate, sweetened desserts, fried foods, refined cereals and high-fat dairy products.

Although there limitations to this study, overall the research offers valuable insight into the role foods play in mental and cognitive health. Some of the underlying hypotheses proposed include:

- 1) The high folate content in cruciferous and leafy vegetables, and dried legumes. Previous studies have linked folate to brain chemistry.
- 2) High fish intake. The association between omega-3 fatty acids and cognitive health.
- 3) Antioxidants present in fruit, as protector nutrients of the brain.
- 4) Synergistic effect of several nutrients in the diet as a whole
- 5) Some research has even linked the conditions of heart disease and inflammation, especially as a result of the highly processed western diet, to depression.

Akbaraly TN, et al. Dietary pattern and depressive symptoms in middle age. Br J Psychiatry. 2009 Nov;195(5):408-13.

Contributions from the SAB

OMEGA-3 FATTY ACIDS

For Mom and Baby

Critical Roles in Health and Development

John R. Miller

Vice President, Science & Technology

GNLD International

"Eating right" is always a good practice to pursue for everyone, young and old. But assuring your body is getting the right nutrition is never more important than it is for women of child-bearing age. Though vitamins, minerals, protein, and a wide array of whole-food nutrients found in fruits, vegetables, and grains all play important roles in health and vitality, a special group of

nutrients found in fish, known as Omega-3 fatty acids, deserve special attention for all mothers and mothers-to-be. There are 8 Omega-3 fatty acids involved in human nutrition, and science has shown that together or individually they are key players in the health of mother and child.

For Mom, they are needed to support a healthy heart and cardiovascular system, heart-healthy blood chemistry, strong cell structure and efficient cell function, and protective anti-inflammatory balance for healthy flexible joints.

For Baby, they are key building blocks for the brain and central nervous system as well as development of the optic nerve and retina. Neurological and visual development is fastest during fetal life and continues during infancy, and Omega-3 fatty acid accumulation

Contributions from the SAB

more than triples during this time. Many studies have shown that mom's dietary intake of Omega-3 fatty acids during pregnancy affects the baby's visual acuity, cognitive development, and even sleep patterns.

Although especially important for women of child-bearing age and children, omega-3 fatty acids are a key component diets for everyone, young and old. Just a few weeks ago, the startling results of a Harvard study found that 96,000 preventable US deaths per year are attributed to omega-3 deficiency. In the month of June alone, there were more than six reports linking omega-3 fatty acids with benefits such as reducing blood pressure, risk of AMD, and heart health. In fact, a recent review of studies on the benefits of omega-3 fatty acids have led scientists to recommend the establishment of a Dietary Recommended Intake (RDI) for EPA and DHA for heart health. More and more, people are recognizing the importance of omega-3 fatty acids in health and prevention.

BACK TO SCHOOL

Children's Health and Nutrition

Critical Roles in Health and Development

Arianna Carughi, Ph.D., C.N.S.

Nutritional Scientist, Stanford Fellow

Numerous studies reaffirm again and again the importance of diet and exercise to kids and teens. The quality of diet and nutrition plays a direct role during this period of rapid cognitive development and physical growth. Sadly, studies consistently show that the "diets of U.S. children and adolescents do not meet current national dietary recommendations for good health" (American Dietetics Association, Feb 2009). World-wide we are seeing a decline in the consumption of milk, fruits, vegetables and whole grains in our children's diets and the increased consumption of sodas and high-fat low nutrient foods that provide empty calories. It's no wonder most children today don't even meet the recommended daily intakes for iron, zinc, copper, vitamin B6, thiamin, vitamin E, vitamin A and vitamin C. To make matters worse, since 1980, obesity rates have doubled among children and tripled among adolescents. Of children and teens 6 to 19 years of age, 16%, or about 9 million of them, are considered overweight. Ultimately, childhood obesity predisposes adult obesity which in turn increases the risk of diabetes, heart disease, cancer and arthritis.

That is why the diet and exercise patterns developed during childhood and adolescence may spell the difference between health and risk of disease in later years. Studies continue to show that heart disease, cancer, stroke, diabetes and high blood pressure have their origins in early childhood and that the best time to start protecting the body is while still young. In fact, the early childhood years many times present the only window of opportunity to influence specific aspects of their health as adults. Height, for example, is mainly determined during the first 5 years of life, influenced both by genetics and nutritional factors. Good quality protein and an abundance of essential nutrients are critical at this time. Another example is bone and tooth health and risk of osteoporosis later in life. These are almost entirely decided by the end of adolescence, which is why calcium intake and exercise during the kid and teenage years are so important. As a result of these important needs, children have very specific and great nutritional demands. A balanced diet which delivers optimal levels of essential nutrients and other food factors is necessary for children:

- **To grow** – nutrients provide the building blocks of our body, the energy with which to fuel growth and the essential factors that make the reactions necessary for growth to happen.
- **To resist infections and heal faster** – our body's immune system is dependent on protein and optimal levels of certain vitamins and minerals to function. It is one of the first systems to suffer when a marginal nutritional deficiency exists.
- **To build strong bones and muscles**
- **To have energy** - diet not only provides fuel to keep our children's body active but it provides vitamins and minerals necessary to unlock energy from our foods.
- **To learn:** healthy, active, and well-nourished children and youths are more prepared and motivated to learn. In fact many studies have shown that well-fed kids, who do not skip breakfast, do better in school and perform better on tests.
- **To maintain a healthy weight** and avoid obesity-related diseases like type 2 diabetes
- **To feel good** about themselves and have a positive attitude at both home and at school.

Diets rich in plant nutrients or phytonutrients build a strong foundation for later health. Without them we are more susceptible to disease. In children, a diet rich in plant foods works 3 ways:

- 1) It establishes healthy eating habits
- 2) It is low in calories and high in fiber
- 3) It is high in protective nutrients.

Phytonutrients help our children fight disease by enhancing their immune system, detoxifying carcinogens and fighting inflammation. The body needs a wide array of these plant nutrients to stay healthy and thriving. Humans evolved to depend on a rich diet of 800 plant foods. However, today most children eat only about 3 or 4 plant foods, and those often are French fries, ketchup, apples and bananas. The phytonutrients humans should be getting are from the colorful plant sources: deep reds, yellows, oranges, purples, greens. The deep colors are indicative of the health-enhancing phytonutrients, such as carotenoids and flavonoids.

In addition, children and adolescents need lots of high quality protein to sustain growth since it is the main building material in our body. And while protein is the main building material in our body vitamins and minerals are essential for normal growth, metabolism and health as well. A recent report showed that children nowadays drink 18% less milk than they did 20 years ago, but they drink 23 percent more soft drinks. This is a shocking trend as we now know the gain in bone weight is fastest during the adolescent growth spurt. About 45% of the adult bone mass is formed at this time, and all the calcium must come from the diet or through supplements. Because the efficiency of calcium absorption from the best sources is only around 30%, it is important that the diet or supplement supplies an abundance of calcium to help build the densest bones possible. Achieving peak bone mass during childhood and adolescence is crucial to reduce the risk of osteoporosis in later years.

Along with providing our children with nutritionally sound diets, we should encourage them to keep physically active. Exercise itself affects health and appetite, which in turn affects their energy, performance, and metabolism. All of these components work in conjunction to help our children grow and develop healthy, long lasting lives.

Fruits and Cardiovascular Health

Understanding the Basics

*Arianna Carughi, Ph.D., C.N.S.
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Cardiovascular disease (CVD), primarily from heart disease (CHD) and stroke, is the leading cause of death in the developed world for both men and women among all racial and ethnic groups. More than 850,000 Americans die each year from CVD accounting for nearly 40 % of all deaths. The cost of heart disease and stroke in the United States in 2005 is estimated at \$393 billion, including health expenditures and lost productivity. These costs are expected to increase by 2010. (1)

Many studies have established that high plasma levels of total cholesterol and LDL cholesterol are among the most important modifiable risk factors for heart disease. While the mechanisms through which these factors lead to atherosclerosis and heart disease are not completely understood, evidence points to the oxidation of LDL particles by either free radical byproducts, or by mediators of inflammatory processes, as a probable causative process.

Large epidemiological studies, such as the Nurses' Health Study (2) and the Scottish Heart Health Study (3) show that individuals who consume diets high in fiber have a lower risk for heart disease. Soluble fiber may be of particular preventive value since it appears to lower plasma cholesterol levels. The mechanisms which may explain how fiber lowers serum cholesterol have been extensively reviewed and include: lower cholesterol absorption, higher bile acid excretion, changes in bile-acid type present in the intestinal tract, and influences of short-chain fatty acid production by intestinal flora. (4,5)

Epidemiological and experimental evidence suggest a protective effect of polyphenols-rich foods against CHD and stroke(6). Polyphenols in fruits, vegetables and beverages may protect from atherosclerosis because of their antioxidant potential and through their anti-inflammatory activity. Flavonoids are known to react with a variety of disease promoting free radicals and to induce antioxidant enzymes.

Contributions from the SAB

While human data is limited, in vitro and in vivo studies have shown that many polyphenols, quercetin among them, and polyphenol rich foods, inhibit LDL oxidation. They can modulate nitric oxide synthesis, promote vascular relaxation and inhibit platelet adherence to the vascular endothelium.

In addition, atherosclerosis is now viewed as a chronic inflammatory disease. Recent studies suggest that flavonoids protect from initiation and progression of atherosclerosis by modulating inflammatory pathways. They have been shown to inhibit mast cell secretion of pro-inflammatory cytokines and inhibit TNF-stimulated induction of endothelial cell adhesion molecules.

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Fight to Stay Young

Focus on Good Nutrition and Physical Activity

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Although aging is a natural process all bodies experience, the organs in your body will typically begin to progressively deteriorate in the third and fourth decades of your life. The rate and severity at which this occurs will be determined by your biological age.

Not to be confused with chronological age, which is just a measure of the amount of time you've lived, your biological age is the accumulation of the

behavioral, environmental, and genetic factors that influence the physiological health of your body. For some people who have led a healthy and active lifestyle, their biological age may be much younger than their chronological age. For most people, unfortunately, their biological age is likely much older.

What we know is that the only factors you can realistically control are your behavioral and lifestyle choices, which include but are not limited to a balanced diet, exercise, and quitting smoking. Monitoring this and establishing such healthy habits while you are young will set you on the right path toward healthy biological aging. But whether you are young, middle-aged or older, science tells us it's never too late to jump into the game.

SOME HEALTHY AGING TIPS FOR MATURE ADULTS

Both good nutrition and physical activity enhance health and enjoyment of life among people of all ages. This is especially true among people age 60 and older. Improving both the quality and the quantity of healthy life among older adults is a critical public health goal. There is a marked increase in nutrient inadequacies in elderly for many reasons, including a lack of attention to nutrient density, no use or misuse of supplements, and drug-induced nutrient deficiencies.

Some of the other physiologic differences that occur during aging that influence requirements for nutrients are:

- Changes in body composition that may result in changes in requirements for calories and nutrients
- Changes in the skin that may influence requirements for vitamin D
- Changes in the intestinal tract that may influence requirements for some vitamin supplements.

Older adults should follow the traditional recommendations with certain changes for special nutritional needs that include higher daily intake of calcium (1200-1500 mg) and vitamin D (800 IU) to prevent osteoporosis. A number of researches suggest that folic acid, B6 and B12 may be helpful in reducing risk of coronary artery disease and preventing loss of cognitive function.

Other studies suggest that immune function may be improved by supplementation with protein, vitamin E, zinc and other micronutrients. Still others recommend that antioxidant vitamins and phytonutrients may prevent age-related cataracts, macular degeneration, death from heart disease and the progression of Alzheimer's disease. In addition older adults have lower caloric needs (1,600 calories or less a day) than younger individuals. Also, consuming adequate amount of fiber and probiotics becomes essential for the elderly.

In brief, as people age, some vitamins and minerals become more important. Thus, increased requirement for many nutrients with age often requires rational intake of dietary supplements. But we can slow these and many other aspects of the aging processes through early nutrition intervention, and a healthy, active lifestyle.

Nutrition & the Immune System

*Diane E. Clayton, Ph.D.
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Health Practitioner*

Today we are facing some of the greatest environmental challenges to our health. Pathogens such as viruses and bacteria seem to be mutating at an increasing rate, developing resistance to our most powerful drugs, and in some cases even escaping detection by our immune system. It has never been more important to ensure the optimal development, functioning and maintenance of our immune system through life. Appropriate nutrition at all life stages can really help us maximize our immune health and potential. Indeed any kind of nutritional inadequacy or sustained imbalance can jeopardize the performance of our immune system. New evidence points to the negative effects of our typical "western" diets high in saturated fat, calories and low in micronutrients on "immunocompetence". It seems that the metabolic problems that these typical diets create contribute to the alterations in immune responsiveness of both the "innate" and "acquired" components of our immune system.

Nutrients can act in various ways to assure the appropriate immune response; by supporting the function of key immune organs such as the thymus, by acting as fuel for immune cells, by protecting the health

of the first line defenses such as skin and mucosa, by enhancing T-cell and B-cell activities and the efficiency of the antigen-antibody response, by providing the signaling molecules involved in the inflammatory response, and even by regulating the production of antibacterial proteins. Thus it is not surprising that there is a very close positive relationship between nutritional status and immunity. However, new roles of nutrients in the coordinated response of our immune system are constantly being discovered, and "immunonutrition" remains a very challenging but exciting area of science.

Apart from the vital role in defending us against invasion by pathogens, our immune system must develop and retain the ability to recognize and react appropriately to our own tissue antigens or "self", to harmless environmental antigens, or to our own gut bacteria. Breakdown in mechanisms acting to provide tolerance may lead to inappropriate immunologic activity such as autoimmunity, allergic reactions to food or environmental antigens, and inflammatory reactions to our gut bacteria.

In many cases these conditions develop in infancy or early childhood, but then may set the pattern of immune response through life. Exposure to specific diet components such as probiotics and the very long chain n-3 polyunsaturated fatty acids (PUFA) seems to be important in setting and modifying immune balance. Many elements of the immune system response including immune balance, change with aging. In part these changes are linked to low grade inflammation, and strategies which reduce inflammation can be beneficial.

Hence, nutrition, along with other lifestyle factors such as exercise, can help preserve immune function. Nutrients such as vitamin E, zinc and carotenoids have particularly well-documented effects in supporting immune response in the elderly.

Despite all the recent scientific advances in "immuno nutrition" and the powerful effects of specific nutrients and phytonutrients it is important to remember that appropriate intakes of all nutrients are essential to ensure optimal development, balance and performance of our immune system through life. After all, our immune system is the foundation of our health.

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IMMUNE PREPAREDNESS IS THE KEY

Tips from the SAB

The nutrient groups and products mentioned here are essentially the same basic recommendations we make for anyone in pursuit of optimal health, vitality and long life. That's because optimal health and optimal immune capacity are closely inter-related; so much so that it essentially impossible to separate them.

Like all things to do with health, it is best that we take action every day to protect and strengthen ourselves and our immune systems against all forms of disease. It is much harder and much less effective to wait until you have a problem and try to boost your immune system after the fact.

Focus on maximizing your immune system and protecting your health every day with these three basic steps:

- Eat a healthy diet rich in colorful fruits and vegetables, whole grains and fresh fish.
- Practice good personal hygiene.
 - Wash your hand regularly.
 - Try to capture any coughs or sneezes in a tissue or handkerchief and ask others to do the same.
 - As much as possible stay some distance from people who are known to have, or thought to have the H1N1 flu.
- Supplement your diet to assure an abundance of immune boosting nutrients each and every day.
 - Our ProVitality products; Tre-en-en Grain Concentrates, Carotenoid Complex & Omega-III Salmon Oil Plus...for whole food nutrition.
 - Formula IV or Formula IV Plus...for vitamin and mineral support.
 - Vitamin-C and Zinc...for added immune strength

*Wishing You a Happy,
Healthy Holiday Season!*

