INTERNATIONAL HEALTH NEWS

Your Gateway to Better Health!

NUMBER 137 **MAY 2003** **12th YEAR**

Cognitive impairment (decline in the ability to think, learn and remember) is a common complaint as we age. Severe cognitive decline may be a precursor to dementia and Alzheimer's disease. There is evidence that keeping the brain active can delay cognitive decline and it is now clear that eating the right kind of fats and supplementing with antioxidants can do likewise.

French researchers have found that a high intake of stearic acid (found in beef, pork, and mutton) and linoleic acid (found in most vegetable oils) makes the membranes of brain cells less fluid and flexible – could this be "hardening of the brain"!? While a high intake of fish oils improves membrane fluidity and flexibility. These more flexible brain cells translate into a substantially lower risk of cognitive decline while high intakes of stearic and linoleic acids can increase the risk of decline by 60-90%.

Researchers at Harvard Medical School add to this knowledge by their findings that supplementing with a combination of vitamin E and vitamin C also helps age-related cognitive decline. I believe it is likely that at least part of the benefits obtained from antioxidant supplementation is due to their ability to prevent long-chain polyunsaturated fatty acids, such as fish oils, from cross-linking and thereby lose their fluidity and flexibility. So it is now official, not only do fish and fish oils and antioxidants protect the heart against disease, they also keep the brain young.

Also in this issue, a mixture of fish oils and GLA (gamma-linolenic acid) is effective in normalizing cholesterol and triglyceride levels, selenium helps prevent cancer, and homocysteine is a strong risk factor for stroke.

Enjoy!

Yours in health,
Hans Larsen, Editor

May Highlights

Frequent use of painkillers and hypertension

BOSTON, MASSACHUSETTS. Over $2 billion is spent every year on the purchase of over-the-counter painkillers (analgesics) such as aspirin, ibuprofen (a NSAID or nonsteroidal anti-inflammatory drug) and acetaminophen (Tylenol or Paracetamol). Little is known about the possible association between analgesics and hypertension (high blood pressure), but it is conceivable that they may interfere with blood pressure regulation by decreasing sodium

excretion, inhibiting nitric oxide synthesis or by altering the production of vasodilatory prostaglandins.

Researchers at Harvard Medical School have just completed a major study involving over 80,000 female nurses between the ages of 31 and 50 years and with no diagnosed hypertension at the beginning of the study. The nurses kept track of their use of analgesics for a 2-year period thus resulting in 164,090 person-years of follow-up. During the follow-up 1650 cases of hypertension were identified giving an annual incidence rate of 1%. Nurses who took NSAIDs for 22 days a month or more were found to have an 86% increased rate of developing hypertension (absolute annual risk of 1.86%) while nurses who used acetaminophen for 22 days a month or more doubled their risk to an absolute 2% per year. The risk increase for acetaminophen was dose-dependent and using it as little as 1-4 days per month increased the relative risk by 22%. Aspirin usage 1-4 days a month increased relative risk by 18%, but this risk was no longer statistically significant after adjusting for other known risk factors like smoking and a family history of hypertension. The researchers conclude that a substantial proportion of hypertension in the United States may be due to the use of analgesics on a regular basis.

Curhan, Gary C., et al. Frequency of analgesic use and risk of hypertension in younger women. **Archives of Internal Medicine,** *Vol. 162, October 28, 2002, pp. 2204-08*

Omega-3 fatty acids and cholesterol

GUELPH, CANADA. Supplementation with fish oils (eicosapentaenoic acid [EPA] and docosahexaenoic acid [DHA]) is highly effective in lowering the blood level of triglycerides. High triglyceride levels are a major risk factor for heart disease particularly in women. Some studies have shown that fish oil supplementation may increase the level of LDL-cholesterol (the "bad" kind), but that the ratio of HDL-cholesterol (the "good" kind) to LDL remains unchanged.

Researchers at the University of Guelph have just completed a study aimed at determining if taking gamma-linolenic acid (GLA) along with the fish oil would maintain the benefits of lowering triglyceride levels without the possible commensurate disadvantage of increasing LDL levels. Their study involved 32 women between the ages of 36 and 68 years who were assigned to one of four supplementation protocols for 28 days.

- Group A: 4 grams of EPA + DHA daily (control group)
- Group B: 4 grams of EPA + DHA + 1 gram of GLA
- Group C: 4 grams of EPA + DHA + 2 grams of GLA
- Group D: 4 grams of EPA + DHA + 4 grams of GLA

At the end of the trial period LDL concentrations were about 12% lower than at baseline in groups C and D and within plus or minus 2% of baseline values in groups A and B. Triglyceride concentrations were 40% lower at day 28 in group A, 39% lower in group B, and 35% lower in group C. There was no difference in triglyceride level in group D between day 0 and day 28 indicating that the GLA overpowered the effect of EPA and DHA on triglyceride reduction. The important LDL/HDL ratio was reduced by 6% in group B, 15% in group C, and 20% in group D. The researchers conclude that a supplementation protocol involving 4 grams of EPA + DHA plus 2 grams of GLA per day is optimum for achieving desirable cholesterol and triglyceride levels in women. They estimate that this protocol reduces the risk of having a heart attack within the next 10 years by 43%.

Laidlaw, Maggie and Holub, Bruce J. Effect of supplementation with fish oil-derived n-3 fatty acids and gamma-linolenic acid on circulating plasma lipids and fatty acid profiles in women. **American Journal of Clinical Nutrition**, *Vol. 77, January 2003, pp. 37-42*

Spironolactone and heart failure

HOUSTON, TEXAS. Researchers at the Veterans Affairs Medical Center at Baylor College of Medicine have just completed a study aimed at determining the extent of complications resulting

from the use of the potassium-sparing diuretic, spironolactone, in the treatment of heart failure patients. The use of spironolactone took a big jump after the release of the results of the RALES trial in July 1999. The RALES trial involved heart failure patients with class III or class IV disease and a left ventricular ejection fraction (LVEF) of less than 0.35 – in other words, pretty sick people. The trial found that the addition of 12.5 to 25 mg/day of spironolactone to the conventional treatment with beta-blockers and ACE inhibitors decreased mortality by about 30%.

The authors of the RALES study set out quite specific guidelines for the use of spironolactone and the Baylor College researchers wanted to see how well these guidelines were being followed in actual practice. Their study involved 104 patients who had been put on spironolactone following the publication of the RALES trial. Their findings revealed a serious mismatch between the RALES guidelines and their application in actual practice.

- Only 25% of the 104 patients met the inclusion criteria from RALES (class III or IV heart failure) with most having less severe disease than experienced among the RALES patients.
- All patients in the RALES study had a LVEF of less than 35%. Only 55% of the 104 patients had a LVEF of less than 35%.
- The average daily dose of spironolactone used was 41 mg/day versus 26 mg/day in RALES.
- 31% had renal insufficiency at the start of spironolactone use. Patients with renal insufficiency were excluded from the RALES trial.
- The average daily dose of ACE inhibitors was twice as high among the 104 patients as compared to the RALES dosage.
- 40% of the 104 patients were continued on potassium supplements even though they had no signs of hypokalemia.

Thus, even though the 104 patients had less advanced disease than the RALES patients they were far heavier medicated. This, combined with poor follow-up by attending physicians, led to the following complications among the 104 patients:

24% developed hyperkalemia (potassium overload) as compared to only 2% in the RALES trial.

31% developed hyponatremia (sodium deficiency).

25% developed renal insufficiency, 7% developed hypotension, and 3% needed a temporary pacemaker implant due to arrhythmias caused by severe hyperkalemia.

The researchers conclude that the rate of complications arising from the use of spironolactone in heart failure patients is significantly higher in actual practice than in a rigidly controlled clinical trial.

Bozkurt, Biykem, et al. Complications of inappropriate use of spironolactone in heart failure: When an old medicine spirals out of new guidelines. **Journal of the American College of Cardiology**, *Vol. 41, January 15, 2003, pp. 211-14*

Tang, W.H. Wilson and Francis, Gary S. Spironolactone in chronic heart failure: All's well that ends well. **Journal of the American College of Cardiology**, *Vol. 41, January 15, 2003, pp. 215-16 (editorial comment)*

Selenium in cancer prevention

INDIANAPOLIS, INDIANA. In 1996 researchers at the Arizona Cancer Center discovered that selenium supplementation decreases the risk of developing cancer by 40% and reduces the risk of dying from cancer by almost 50%. The benefits of selenium were ascribed to its ability to scavenge DNA-damaging free radicals and to help in the elimination of damaged, potentially cancerous cells. Researchers at the Indiana University have now discovered a third possible mode by which selenium might fight cancer. They discovered that selenomethionine, the primary organic form of selenium, turns on a key regulatory protein, p53, which is one of the body's main initiators of DNA repair. Previous research has shown that people who have an efficient DNA repair mechanism are less likely to develop cancer. Eating more selenium-rich foods, such as Brazil nuts, or supplementing with 200 micrograms/day of selenium may help people improve the efficiency of their DNA repair mechanism. A daily intake of 200 micrograms has been found to be entirely safe.

Longtin, Robert. Selenium for prevention: Eating your way to better DNA repair? **Journal of the National Cancer Institute**, *Vol. 95, January 15, 2003, pp. 98-100*

Rye bread may help protect against diabetes

KUOPIO, FINLAND. The loss of acute insulin response (AIR) is one of the first signs of impending type 2 diabetes. It is believed that the reduction in AIR is tied in with exhaustion of pancreatic beta cells. Researchers at the University of Kuopio now report that the regular consumption of high fiber rye bread significantly increases AIR. Their clinical trial involved 20 postmenopausal women (average age of 59 years) who were randomized to replace their usual intake of cereals and bread with either high fiber rye bread (17% dietary fiber) or ordinary wheat bread (2.8% dietary fiber) for two 8-week periods interspersed with an 8-week wash-out period. The breads were consumed in a quantity sufficient to provide 20% of daily energy requirements. At the end of the 8-week rye bread period the average AIR had increased by 9.9% in the rye bread group as compared to only 2.8% in the wheat bread group. The researchers conclude that high fiber rye bread appears to enhance insulin secretion. This may be due to an improvement in pancreatic beta cell function and could be important in the prevention of glucose intolerance and diabetes.

Juntunen, Katri S., et al. High-fiber rye bread and insulin secretion and sensitivity in healthy postmenopausal women. **American Journal of Clinical Nutrition**, *Vol. 77, February 2003, pp. 385-91*

Antioxidants help prevent cognitive decline

BOSTON, MASSACHUSETTS. Recent research has shown that a high intake of vitamin C and vitamin E helps prevent the development of Alzheimer's disease and that very high doses of vitamin E delay the progression of the disease. Researchers at Harvard Medical School now report that vitamins C and E also help prevent cognitive impairment in advanced age. Their study involved 14,968 female nurses aged 70 to 79 years who had been enrolled in the Nurses' Health Study in 1976. The nurses had completed dietary surveys (including vitamin use) every 2 years since 1980. Between 1995 and 2000 the nurses participated in a telephone interview to determine their mental state and cognitive function (ability to learn, think and remember).

The researchers found that women who supplemented with vitamins C and E and had done so for 10 years or more scored significantly higher on the cognitive test than did nurses who had not supplemented or had supplemented for less than 10 years. The difference in score would correspond to an age difference of 1 to 2 years. In other words, long-term supplement users had a cognitive function equivalent to nurses 1 or 2 years younger. Just taking vitamin E or vitamin C on its own was associated with much less benefit indicting that the combination is needed for optimum results.

Grodstein, Francine, et al. High-dose antioxidant supplements and cognitive function in community-dwelling elderly women. **American Journal of Clinical Nutrition**, *Vol. 77, April 2003, pp. 975-84*

Haan, Mary N. Can vitamin supplements prevent cognitive decline and dementia in old age? **American Journal of Clinical Nutrition**, *Vol. 77, April 2003, pp. 762-63 (editorial)*

Vitamin C increases glutathione levels

SHERBROOKE, CANADA. Glutathione is the body's most important internal antioxidant, i.e. its main defense against damage and disease caused by free radical reactions. Vitamin C is the main water-soluble dietary antioxidant. Many diseases have been associated with a vitamin C deficiency among them cardiovascular disease, cancer, cataracts, hypertension, diabetes, hepatitis, HIV, and cystic fibrosis.

Researchers at Sherbrooke University in Quebec now report that vitamin C supplementation is highly effective in increasing glutathione concentration in blood plasma and, more

specifically, in lymphocytes (white blood cells). Their study involved 48 healthy men and women between the ages of 25 and 64 years. All participants had low initial levels of plasma ascorbate (vitamin C) averaging 19.5 micromol/L. The plasma level of ascorbate was found to correlate linearly with that of the lymphocyte level.

All participants were given 1 or 2 500 mg tablets of vitamin C for a 13-week period followed by a 13-week period on a placebo. At the end of the first 13-week period vitamin C levels in lymphocytes had increased by an average of 51%. This increase was accompanied by an 18% in lymphocyte glutathione level and was independent of whether the participants had supplemented with 500 mg or 1000 mg of vitamin C (ascorbic acid) per day. The levels of both vitamin C and glutathione returned to normal after 13 weeks of no supplementation. The researchers conclude that ascorbate (vitamin C) spares glutathione by "getting at the free radicals first" and secondly by converting spent (oxidized) glutathione back to the active (reduced) form.

Lenton, Kevin J., et al. Vitamin C augments lymphocyte glutathione in subjects with ascorbate deficiency. **American Journal of Clinical Nutrition**, *Vol. 77, January 2003, pp. 189-95*

Homocysteine and stroke risk

TEL-HASHOMER, ISRAEL. There is growing evidence that a high blood level of homocysteine is a significant risk factor for ischemic stroke in the general population. Now Israeli researchers report that the risk is even greater in patients already suffering from coronary heart disease (CHD). They measured homocysteine levels in 80 CHD patients who had suffered an ischemic strike and compared them to the levels observed in 80 matched CHD patients who had not suffered a stroke. High homocysteine levels (greater than 17.4 micromol/L) were found to be associated with a 3-fold increase in stroke risk. This increased risk was independent of other traditional risk factors for stroke.

Tanne, David, et al. Prospective study of serum homocysteine and risk of ischemic stroke among patients with preexisting coronary heart disease. **Stroke**, *Vol. 34, March 2003, pp. 632-36*

Editor's comment: High homocysteine levels can safely and effectively be lowered by supplementation with folic acid, vitamin B6 and vitamin B12.

Cognitive function and fat intake

PARIS, FRANCE. Several epidemiological studies have shown that a high dietary intake of linoleic acid and a low intake of fish oils (eicosapentaenoic acid [EPA] and docosahexaenoic acid [DHA]) are associated with cognitive impairment and an increased risk of dementia. French researchers now report that the fatty acid composition in erythrocytes (red blood cells) is an indicator of the risk of cognitive function decline (ability to learn, think and remember).

Their study involved 246 men and women (aged 63 to 74 years) who had the lipid (fatty acid) composition of their erythrocytes analyzed in 1995. All participants also underwent tests to determine their cognitive function at baseline and after a 4-year follow-up period. The researchers found that study participants with high erythrocyte levels of stearic acid (a saturated fatty acid) had a 91% higher risk of having experienced a significant decline in cognitive function over the 4 years than did participants with average levels. Participants with high levels of linoleic acid (an unsaturated omega-6 acid) had a 59% increased risk of decline while those with high levels of EPA and DHA had a 41% lower risk of experiencing cognitive decline than did those with normal levels.

The researchers suggest that the omega-3 fatty acids EPA and especially DHA help keep the membranes of brain cells more fluid while saturated and omega-6 fatty acids tend to "harden" them. They believe this and the anti-inflammatory effects of EPA and DHA are what help preserve cognitive function.

Heude, Barbara, et al. Cognitive decline and fatty acid composition of erythrocyte membranes – The EVA Study. **American Journal of Clinical Nutrition,** *Vol. 77,April 2003, pp. 803-08*

Editor's comment: Stearic acid is found in high quantities in beef, mutton, and pork while omega-6 fatty acids are abundant in vegetables oils such as safflower, sunflower, and soybean oil. The long-chain omega-3 fatty acids (EPA and DHA) are found in fatty fish and fish oils.

Calcium absorption study

BOSTON, MASSACHUSETTS. Dietary surveys carried out in the United States have consistently shown that the average daily intake of calcium is far below that required for prevention of osteoporosis; this is especially true for elderly people. The recommended daily intake for adults over the age of 51 years is now 1200 mg. This amount is difficult to obtain from the diet especially among older people who may have impaired calcium absorption due to a lack of stomach acid (hypochlorhydria), intestinal resistance to vitamin D or, in the case of postmenopausal women, an estrogen deficiency.

Researchers at the US Department of Agriculture believe that increased milk consumption or supplementation is required in order to ensure an adequate daily calcium intake. They recently conducted an experiment to determine the bioavailability (absorption) of three common sources of calcium supplementation – skim milk, calcium-fortified orange juice, and calcium carbonate tablets. Twelve volunteers participated in the 6-week crossover study. The supplement protocol consisted of a 15 oz glass of skim milk at breakfast and dinner, an 11 oz glass of orange juice fortified with calcium citrate maleate at breakfast and dinner, or a 500 mg calcium carbonate tablet with breakfast and dinner.

The researchers monitored the blood concentration of parathyroid hormone (PTH suppression test), calcium serum and urinary levels, and urinary collagen type I N-telopeptide cross-links (NTX) – a measure of bone resorption. The evaluation of each calcium supplement was preceded by a week on a low calcium diet and no supplementation. The researchers conclude that calcium from skim milk, fortified orange juice, and calcium carbonate are equally well-absorbed, i.e. all three are good, bioavailable sources of calcium. They did note that the phosphorous intake, when on the skim milk supplementation program, was significantly higher (by a factor of 4 to 5) than when supplementing with orange juice or calcium carbonate.

Martini, Ligia and Wood, Richard J. Relative bioavailability of calcium-rich dietary sources in the elderly. **American Journal of Clinical Nutrition**, *Vol. 76, December 2002, pp. 1345-50*

NEWSBRIEFS

Prostate cancer and complementary medicine. A recent survey of 1100 prostate cancer patients revealed that 18.2% of them were currently using a complementary therapy while 23.5% had done so in the past. Patients who were undergoing conventional hormone therapy or had been assigned to "watchful waiting" were the most likely to use complementary therapies. The use was more widespread among well-educated, high-income patients. About 90% of all users believed that the therapy would help them live longer, 47% thought it would eliminate the prostate cancer, and 60% believed it would relieve symptoms. The study participants were only asked about their use of dietary changes or supplements. The most common therapy was a low-fat diet (35.2%) followed by multivitamins (30.5%), green tea (21.8%), and selenium (21.4%). Only 18.2% of the participants had discussed the use of complementary therapies with their family physician while 35.6% had discussed it with their urologist.

Journal of Urology, Vol. 168, December 2002, pp. 2505-09

Safety of food supply questioned. Food poisoning kills 5,000 people, puts 325,000 in hospital, and makes 76 million sick every year in the USA. One of the major reasons for this is the antiquated US food inspection system, particularly in the beef industry, which places the burden of preventing contamination on USDA inspectors rather than on the industry itself. Beef and other foods can be made perfectly safe through the implementation of Hazard Analysis and Critical Control Point (HACCP) plans. HACCP was

originally developed to protect astronauts from getting food poisoning in outer space – it worked like a charm, but the food industry is adamantly opposed to its general implementation. Congress, under heavy pressure from the industry, recently authorized the use of irradiation to treat ground beef served in schools and allowed it to be called "pasteurization". Says David Theno, a food safety expert, "designing an effective food safety system is a piece of cake. All it takes is political will, some basic intelligence and relentless testing."
New Scientist, February 22, 2003, p. 25

"Pharming" under scrutiny. Pharming is the next major growth area for biotech companies like Monsanto and ProdiGene. Pharming uses genetically modified food crops to produce vaccines (Norwalk virus, hepatitis B, HIV, etc.) antibodies (for treatment of cancer, viruses, and dental cavities) and industrial proteins (trypsin, aprotinin and avidin). The most common food crops used in pharming are corn, tomato, banana, and potato. Brave New World indeed! Except what happens if you eat an HIV virus tomato by mistake? ProdiGene was recently fined $3 million when corn modified to produce a pharmaceutical protein was found growing among normal soybeans in Iowa and Nebraska. Turns out that ProdiGene did not clean up the fields properly and left some pharm-seeds behind. Anti-GM activists are raising the alarm and even the biotech industry agrees that pharming regulations need some serious tightening up.
New Scientist, March 1, 2003, pp. 22-23

New method for identifying GM foods. Genetically modified foods must now be labeled as such within the European Union. The problem is that until now there has been no easy way to identify GM foods and thus ensure that they are not "sneaked" into the food chain without the consumers' knowledge. Just recently the National Institute of Agricultural Botany (NIAB) was granted a patent on a DNA bar-coding technique. The new technique involves the insertion of a unique, inactive sequence in all GM organisms that could be identified with a simple DNA test. It would even be possible to use the system to encode the producers name and technical details into the GM organism as well.
New Scientist, February 15, 2003, p. 5

New anticoagulant looks promising. Warfarin (coumadin) is a fairly effective anticoagulant, but has serious side effects (increased bleeding risks) which limits its general use. Researchers at Zena and the Mount Sinai School of Medicine have just announced the results of the SPORTIF-III trial that evaluated a new anticoagulant, ximelagatran, in comparison with warfarin. Over 3400 patients with atrial fibrillation and some additional risk factors for stroke such as congestive heart failure, hypertension or a previous stroke participated in the trial. The trial showed that ximelagatran was as effective as warfarin in protecting against both ischemic and hemorrhagic stroke and caused less internal bleeding than warfarin. Signs of liver toxicity did show up in 6.5% of the participants. The new anticoagulant is given in 2 daily doses of 36 mg each and does not require the close monitoring that warfarin does.
American College of Cardiology, Annual Scientific Sessions, March 31 – April 2, 2003, abstract 421-9

INTERNATIONAL HEALTH NEWS is published monthly by:
Hans R. Larsen MSc ChE, 1320 Point Street, Victoria, BC, Canada, V8S 1A5

E-mail: editor@yourhealthbase.com World Wide Web: http://www.yourhealthbase.com
ISSN 1203-1933