$2.50

The NUTRITION REPORTER™

Vol. 6 No. 5 THE NEWSLETTER THAT REPORTS VITAMIN AND MINERAL THERAPIES May 1995

Dietary Fats, Glial Cells Crucial to Brain Development, Protection Against Disease

In the provocative book *Feed Your Kids Bright* (Simon & Schuster, 1987) Harold and Francine Prince described the value of the brain's "glial-cell complex" in intelligence. Much of what the Princes related was based on the work of Ralph Minear, MD, a pediatrician at the Harvard Medical School. Their idea was relatively simple: the richer the glial-cell complex, the higher the intelligence.

Glial cells form the supporting, or non-nervous, tissue of the brain and spinal cord. In contrast, neural cells actually send messages. As an analogy, the glial cells form the highways, and the neurons the cars that drive on them.

At the time, Minear and the Princes were iconoclasts. In a fat-phobic world—increasingly filled with anti-egg paranoia and fat-free foods—they pointed out that the glial cells were dependent on reasonable amounts of fat in the diet. They recommended the consumption of cholesterol from eggs, as well as essential fatty acids, including linoleic, linolenic, and arachidonic acids—nutrients that form the asphalt and cement of the glial-cell highway.

This little bit of history leads up to two recent events. In the first, the American Academy of Pediatrics has recommended that adult restrictions of fat intake *not* be applied to children. Such restrictions could result in stunted growth and development, explained Robert E. Olson, MD, of the University of South Florida, Tampa.

Health organizations generally recommend that adults consume no more than 30 percent of energy (calories) from fat. Olson noted in the *American Journal of Clinical Nutrition* (Feb. 1995,61:271-3) that Canadian pediatricians now recommend giving infants a diet consisting of 50 percent quality fats, then tapering fat intake from 50 percent (of energy from fat) at age two to 30 percent during adolescence.

"It is my view...that children are

Continued on page 4

Modified Form of Citrus Pectin Shows Promise in Halting Prostate Cancer Spread

Researchers at the University of Michigan have found that an oral form of "modified" citrus pectin can prevent the spread of prostate cancer.

Pectin is generally an unabsorbable component of the fruit's fiber. The modified citrus pectin—water-soluble—is easily made by a laboratory process described in 1960. The citrus pectin is first made more alkaline (pH of 10), then made more acidic (pH of 3), and finally stabilized at a mildly acidic level (pH of 6.3). It is not, at present, available as a commercial product.

Kenneth J. Pienta, MD, with coresearchers from Wayne State University, injected prostate cancer cells into three groups of laboratory rats. Fifteen of the 16 untreated rats developed lung metastases within 30 days.

In contrast, modified citrus pectin provided significant dose-related protection for the treated rats. When treated with 0.1 percent modified citrus pectin in their drinking water, seven (50 percent) of the 14 rats developed fewer metastases. And when treated with 1 percent (10x more) modified citrus pectin, nine (56 percent) of 16 rats developed fewer metastases, according to Pienta's report in the *Journal of the National Cancer Institute* (March 1, 1995;87:348-53).

The citrus pectin had no effect on the primary tumor. However, most cancer deaths are related to metastases rather than to the primary tumor.

Researchers believe that metastases occur because tumor cells adhere to the endothelial cells that line blood and lymphatic vessels, the heart, and other organs. The surface of the cancer cells include various carbohydrate-binding proteins, including galectin-3, that help it bind to endothelial cells. The citrus pectin, rich in a number of simple sugars that bind with galectin-3, prevents the roving cancer cells from finding a foothold.

"The inhibitory effect of the modified citus pectin appears to be cytostatic rather than cytotoxic," wrote Pienta.

Galectin-3 is also found in human prostate cancer cells, and the researchers believe their findings are directly applicable in the prevention of prostate cancer metastases in people.

"To the best of our knowledge, this is the first report of an oral method to prevent spontaneous prostate cancer metastases," Pienta wrote. □

Lorenzo's Oil Works—with the Addition of Omega-3 Fatty Acids and Multivitamins

Truth is often stranger than fiction: Lorenzo's oil, made famous by the movie of the same name, *does* work, according to a new study by one of Lorenzo's physicians—particularly when it's given with the omega-3 essential fatty acids.

The 1992 film related the experiences of Augusto and Michaela Odone, and their son Lorenzo, who was diagnosed with adreno-leukodystrophy (ALD). The genetic disorder causes an abnormal accumulation of saturated, very long-chain fatty acids in the brain, central nervous system, and blood.

Women carry the ALD gene and may suffer mild symptoms, but it is their sons who suffer the deadliest symptoms. It usually strikes between ages four and eight, causing a powerful inflammatory response that destroys the protective myelin sheath that surrounds nerve cells. ALD destroys speech and vision, causes other crippling neurological symptoms, and typically results in death within two years of diagnosis.

In the case of the Odone family, the medical establishment wrote off Lorenzo as incurable. His parents read the medical literature and eventually traveled to South Africa to obtain glyceryl trioleate and glyceryl trierucate (Lorenzo's oil).

Hugo W. Moser, MD, of Johns Hopkins University, began treating 50 ALD patients before they developed neurological symptoms. On a daily basis, for periods ranging from 12 to 33 months, the patients consumed: 2.5 to 4 tablespoons (37.5 to 60 ml) of glyceryl trioleate and glyceryl trierucate (Lorenzo's oil, a highly purified olive oil derivative), 240 mg docosahexaenoic acid and 360 mg eicosapentaenoic acid, safflower oil (containing linoleic acid), and a multivitamin/multi-mineral supplement.

Moser compared their disease progression with historical controls. He reported in *International Pediatrics* (1994;9:196-204) that 23 of the children remained well. Seven may have worsened (the changes were ambiguous), 11 worsened slightly, and 4 died of ALD.

"We believe that it is essential to continue the current therapeutic trail of Lorenzo's oil in asymptomatic ALD patients....It is clearly not an absolute preventive measure...," Moser wrote.

By the way, Lorenzo remains alive and continues to improve. □

Coenzyme Q10, Vitamin A Protect the Eyes Against Hereditary Retinitis Pigmentosa

Retinitis pigmentosa (RP) is a hereditary disease that causes the progressive degeneration of the rods and cones of the retina. The most common symptoms include night blindness and a narrowing visual field, as if one is looking through a tube. It can lead to total blindness.

Over the past few years, several studies have reported that 15,000 IU of vitamin A, which the eyes require for numerous functions, can slow the progression of RP. (See Berson, E.L., *Archives of Ophthalmology*, June 1993;111:751-4.)

Coenzyme Q10, a vitamin-like nutrient, may also be of value, according to researchers at the University of Bologna, Italy. The findings of R. Lodi, MD, and L. Scorolli, MD, have not been published, but they were presented at the Eighth International Symposium on the Biochemical and Clinical Aspects of Coenzyme Q, Nov., 1993, in Stockholm.

The doctors gave 100 mg of CoQ10 daily for three months to three patients. Two of the three had mild RP, the other a severe form of the disease. Lodi and Scorolli found that the vision of the two milder RP cases improved as a result of the CoQ10.

CoQ10 has two primary functions. It is essential for the production of energy at the cellular level, and it serves as an antioxidant. In an abstract, Lodi and Scorolli wrote, "These preliminary results show that our patients with retinitis pigmentosa have a deficit of brain energy metabolism, and that treatment with CoQ results in an increase of the readily available energy in the cells...Our spectroscopic and clinical results justify the interest in CoQ as a pharmacological aid in the treatment of retinitis pigmentosa. Further study is however needed in order to determine its efficacy in the treatment of this disease." □

Fish Oils Prevent Breast Cancer Metastases

Large amounts of dietary fish oils inhibited the spread of breast cancer cells to the lungs of mice, according to a study conducted at the America Health Foundation, Valhalla, N.Y.

David Rose, PhD, fed laboratory mice several different diets, with large amounts of either corn oil, linoleic acid, or omega-3 fish oils before and after they were injected with human breast cancer cells.

The mice eating the corn-oil diet suffered the highest rate of primary tumor growth. Those on the linoleic acid diet had the greatest number of metastases from the breast to the lungs.

However, the diet with the largest amount (18 percent) of fish oils "suppressed the development of lung metastases" in the mice, according to Rose's report in *Nutrition and Cancer* (1994;22:131-41).

Continued on page 4

B Vitamins Help in Osteoarthritis

"Historically, dietary causes have been associated with both osteoarthritis and rheumatoid arthritis, but the idea is controversial, with little evidence that specific diet components are effective," wrote Margaret Flynn, PhD, in the J*ournal of the American College of Nutrition* (Aug. 1994;13:351-6).

But based on a recently discovered link between vitamin B12 and bone metabolism, the University of Missouri, Columbia, researcher decided to measure the effects of B12, folate, and Acetaminophen (the non-steroidal anti-inflammatory drug, or NSAID, used in Tylenol) on 26 men and women who had suffered from osteoarthritis of the hands for at least five years.

The study began with a 10-day "washout" period in which patients stopped taking any vitamins or pain-relieving drugs. For three two-month periods, they randomly took (1) 6,400 mcg of folate, (2) 6,400 mcg folate and 20 mcg B12, or (3) a placebo. They were also instructed to take Acetaminophen as needed for pain.

Flynn reported in the J*ournal of the American College of Nutrition* (Aug. 1994;13:351-6) that patients taking B12 and folate could exert greater hand-grip pressure than those taking just the folate or the placebo. The subjects taking B12 and folate also reported less pain and stiffness. In addition, patients taking the two vitamins had much less need for Acetaminophen.

Inadequate levels of these two vitamins can be caused by a number of factors. "Nutrients in food can be changed in cooking, discarded in cooking water, malabsorbed under influence of other food components and over-the-counter or prescribed drugs," wrote Flynn. "People make poor food choices daily for various reasons: financial, fear of certain foods, personal preferences, belief of 'allergies' to foods, food fads and poor dentures, all of which also interfere with nutritional status. Physiologic changes in (the) aging gastrointestinal tract contribute to digestive and absorptive processes."

She concluded by stating, "Side effects of the vitamin combination were none; side effects of NSAIDs are many. Cost of the vitamins is lower. Further research of the effect of B12-Folate in human arthritis is promising and needed." □

Low Glutathione May Trigger Prostate Cancer

Glutathione, a powerful anti-oxidant, forms the foundation of the body's natural defenses against disease and toxic chemicals. Just recently, researchers discovered that a genetic defect can prevent the production of glutathione S-transferase (GST) and may be a major cause of prostate cancer. The body manufactures GST from glutathione, which is found in food and manufactured within the body.

The defect was found in prostate cancer tissue samples from 88 of 91 men, but not in tissue samples from healthy men, according to William Nelson, MD, of the Johns Hopkins University School of Medicine.

"GSTs have been proposed to play a critical role in defending normal cells against...carcinogens...a possible prostate cancer prevention strategy might be the therapeutic augmentation of GST activity by using GST inducers," Nelson and his colleagues wrote in *Proceedings of the National Academy of Sciences of the USA* (Nov. 22, 1994;91: 11733-7).

Various foods and food components promote the formation of GST. Other researchers at Johns Hopkins have identified the isothiocyanates and sulforaphanes found in broccoli, cauliflower, and brussel sprouts as being among these GST inducers. In addition, lysine and vitamin C can also boost glutathione production. □

DHEA May Help You Grow Older Gracefully

A study has confirmed that the adrenal hormone dehydroepiandrosterone (DHEA) may retard some of the complications of aging, including fatigue and muscle weakness.

DHEA first appears in the bloodstream around age 7, peaks at 25, then declines with age. At age 70, most people have only one-tenth the DHEA they had at age 25.

Samuel Yen, MD, of the University of California, San Diego, gave 13 men and 17 women, 50 mg of DHEA daily for six months. The patients had more restful sleep, more energy when awake, and were better able to cope with stress. No negative side effects were reported.

According to Yen's article in the Jou*rnal of Clinical Endocrinology and Metabolism* (June 1994;78:1360-7), the DHEA was "associated with a remarkable increase in perceived physical and psychological well-being" among the volunteer subjects, ages 40 to 70. Sixty-seven percent of the men and 84 percent of the women reported feeling better.

Although benefits have been ascribed to DHEA for some 20 years, Yen's is the first well-controlled study to look at the substance's affect on aging."These observations...constitute the first demonstration of (a) novel effect of DHEA replacement in age-advanced men and women," he wrote. □

Fish Lowers Heart Risk

Swedish researchers reported in the *American Journal of Cardiology* (Haglund, O., July 15, 1994;74:189-92) that daily intake of 4.5 grams of omega-3 fatty acids consistently decreased triglyceride, lipoprotein(a), and fibrinogen levels, reducing the risk of heart disease. □

Beta-Carotene Enhances Absorption of Other Carotenoids

Beta-carotene enhances the absorption of other carotenoids, such as alpha-carotene and lycopene, according to Australian researchers.

To identify this property, Mark Wahlqvist, MD, of the Monash University Medical Center, Australia, had to use synthetic beta-carotene. The natural form of the nutrient contains about 5 percent alpha-carotene and trace amounts of other minor carotenoids, which can confound the results of studies.

"Several short-term and long-term beta-carotene supplementation studies have focused on the increase in serum or plasma beta-carotene concentration, whereas little is known about the effect of beta-carotene on other carotenoids,Wahlqvist wrote in the *American Journal of Clinical Nutrition* (Dec. 1994;60:936-43).

Wahlqvist headed the Australian Polyp Prevention Project, which was conducted through numerous medical centers. He and other researchers gave 20 mg (33,333 IU) of synthetic beta-carotene daily to 224 patients for 24 months. All of the patients had recently undergone surgery to remove colorectal adenomas.

Blood levels of beta-carotene, alpha-carotene, and lycopene were "significantly higher" among those who received the beta-carotene supplement, compared with placebo. Men, but not women, also had an increase in beta-cryptoxanthin, another carotenoid.

"A biological interaction between beta-carotene and other carotenoids is therefore suggested and would need to be taken into account in the evaluation of any protective effect of beta-carotene supplementation for cancer, coronary heart disease, or other diseases," Walqvist wrote.

Other potential benefits of carotene supplements among these patients were not reported. ▯

Dietary Fats, Glial Cells Essential to Brain...

Continued from page 1

not at risk for clinically significant atherosclerosis...It is reasonable, in my opinion, to...recommend that older children follow adult guidelines when they become adults ....there is no substantial evidence that childhood diet is related to the etiology of coronary heart disease (CHD)," Olson wrote. "Because no groups of children have been followed for decades after having their blood pressure, serum cholesterol, and lipoprotein cholesterol concentrations measured, it is impossible to determine the extent to which these values correlate with adult incidence of CHD."

The second related event was the publication of four articles in the British journal *Nature* on the role of a protein called glial-cell-line-derived neurotrophic factor, or GDNF. This natural substance, discovered only two years ago, nourishes neural cells (kind of like freeway gas stations, to continue to analogy).

GDNF appears to protect the neurons that produce dopamine, a crucial brain chemical involved in movement, emotions, and cognition. Researchers believe that a GDNF pill may someday ease symptoms of neurological diseases, such as Parkinson's disease or amyotrophic lateral sclerosis (ALS, or Lou Gehrig's disease).

In one of the studies, a team of researchers led by Lars Olson, Ph.D., of Sweden's Karolinska Institute found that GDNF protected against a chemical that destroys neurons much the way Parkinson's does. According to Olson's report in *Nature* (Jan. 26, 1995;373:335-9), mice treated with GDNF days after exposure to the neuron-destroying chemical had signficantly restored dopamine levels and brain function.

An article by Qiao Yan, Ph.D., of Amgen Inc., reported in *Nature* (373:341-4) that GDNF is "the most potent motor neuron trophic (nourishing) factor found so far." Yan found that GDNF stopped massive neural cell death and stabilized the decrease in choline activity in the brain.

In the other two studies, researchers reported that GDNF enhances the survival of neurons and that "GDNF or related molecules" may be helpful in the treatment of Parkinson's disease and other neurological conditions.

Although GDNF is not available commercially, and probably will not be for some time, there's an important point the researchers neglected: the diet is the source of all raw materials needed to product GDNF and other essential biochemicals. ▯

Fish Oils and Cancer...

Continued from page 2

Particularly noteworthy: a diet with only 11.5 percent fish oils did *not* provide this benefit. *Nor* did a diet with 18 percent deodorized fish oil and vitamin E. The latter suggests that the process of deodorizing fish oil removes a protective factor. ▯

THE NUTRITION REPORTER™ (ISSN 1079-8609) is published monthly except for August and December. Vol. 6, No. 5. Phone: (503) 642-1372. Fax: (503) 649-8948. Internet: jack_challem@ortel.org CompuServe: 74543,2122. This newsletter is strictly educational and not intended as medical advice. For diagnosis and treatment, consult your physician. Subscriptions are $25 per year in the U.S., $32 U.S. ($43 CND) for Canada, and $38 for other countries, payable in U.S. funds.

THE NUTRITION REPORTER™
Post Office Box 5505
Aloha, OR 97006-5505 USA

Editor and Publisher: **Jack Challem**
Associate Publisher: **Renate Lewin**

Medical Advisors:
Lendon H. Smith, MD
Portland, Oregon
Richard P. Huemer, MD
Vancouver, Washington
Ralph K. Campbell, MD
Polson, Montana
G. Edward Desaulniers, MD
The Shute Institute Medical Clinic
London, Ontario, Canada