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Editorial

I have recently noted two main themes in current medical literature:

Vitamin and mineral deficiencies are widespread in the developed world; Oral supplementation with vitamins and other supplements is not only effective in alleviating deficiencies, but can also confer many other benefits.

In this issue we report that vitamin E deficiency is widespread in the United States especially among African Americans. Vegetarians tend to be deficient in vitamin B12 and need to supplement. This is especially important for female vegetarians as a vitamin B12 deficiency has been linked to an increased breast cancer risk. Women with an adrenal insufficiency are short of DHEA (dehydroepiandrosterone) and cystic fibrosis patients need vitamin K supplementation.

Recent clinical trials have shown that fish oils help prevent sudden cardiac death, that echinacea really does reduce the severity and duration of the common cold, and that lutein and zeaxanthin prevent cataracts and macular degeneration. Psyllium can help diabetics control their blood sugar and phosphatidylserine is essential for brain health. The information about the benefits of supplementation is indeed coming in at a fast and furious rate. We'll continue to keep you posted of all the latest breakthroughs as we begin the new millennium and wish you all the best for a happy and healthy future.

*Yours in health,
Hans Larsen*

December Highlights

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LETTERS TO THE EDITOR

I have been suffering from psoriasis for the past four years. I have been treated with homeopathy and traditional Indian medicine with

some success, but was wondering about the current status of conventional treatment.

Henry, USA

Editor: *I am not up-to-date on all the drugs for psoriasis, but you may find some useful information at <http://www.psoriasis.org/npf.shtml>. You may also want to look into Dr. John Pagano's new book "Healing Psoriasis". You can find more information about this at www.psoriasis-healing.com. There are several recent discoveries regarding psoriasis. People suffering from it have been found to have high homocysteine levels so supplementation with B vitamins especially folic acid should be helpful. An extract from the Oregon grape has been found highly effective in the treatment of*

psoriasis. Meat, sugar and smoking aggravates it while the following supplements may be helpful - flax and fish oils, selenium, zinc, vitamin C, and evening primrose oil.

I have a friend suffering from hepatitis C. She was treated with interferon, but it did not help. Do you know of any alternative approaches that might work?

Najah, Saudi Arabia

Editor: *There are several alternative approaches to the treatment of hepatitis. Please check with her doctor before using any of these as they may not be appropriate in all cases:*

- Diet of whole, unprocessed foods
- No sugar, alcohol or caffeine
- Regular exercise and at least 6 glasses of water per day
- High potency multivitamins (B vitamins at least 50 mg of each except vitamin B12 and folic acid where 0.5 mg daily is sufficient)
- 3000 to 6000 mg of vitamin C daily in divided doses
- 400 IU of natural vitamin E daily
- 70 to 210 milligrams of silymarin (milk thistle) three times daily
- Thymus extracts and certain homeopathic remedies have also been found useful.

ABSTRACTS

High homocysteine levels associated with stroke

BOSTON, MASSACHUSETTS. A high blood level of the amino acid homocysteine has been implicated as a risk factor for heart disease. A group of American researchers now provide convincing proof that a high homocysteine level is also a potent risk factor for stroke. Their investigation involved 1947 participants in the Framingham Study (1158 women and 789 men with a mean age of 70 years) who had their homocysteine levels (non-fasting) measured between May 1979 and May 1982 and were subsequently followed-up through to May 1992. By the end of the study 165 strokes had

I have a niece about 37 years old who has just been diagnosed with multiple sclerosis. I am interested in nutritional information and possible supplements she can take.

Brad, Canada

Editor: *There is increasing evidence that mercury can cause or aggravate MS. So the first thing your niece should do is to see a dentist who can advise on the removal of her amalgam fillings. The removal must be done by a dentist trained to do so safely and should be followed by a supervised detoxification program once ALL mercury has been removed from the mouth.*

Dr Ray Swank at the University of Oregon Medical School has obtained good results by putting his MS patients on a diet low in saturated fats and high in polyunsaturated fats (not hydrogenated). High potency multivitamins with extra vitamin C (500-1000 mg three times daily), vitamin E (400-800 IU/day), vitamin B12 (1 mg twice daily), and 1-2 tablespoons of flaxseed oil are the recommended supplements for MS. Dr. Michael Murray, ND also recommends avoiding animal products (except fish), alcohol, caffeine, and sugar and eating only whole, unprocessed foods.

occurred among this group of elderly people. A high homocysteine level (greater than 14.24 micromol/L) was found to be associated with a 153 per cent increase in the risk of stroke when compared to the incidence among participants having a level of 9.25 micromol/L or less. The stroke risk increased linearly with increasing homocysteine level. The increased risk associated with a high homocysteine level was reduced to 82 per cent (from 153 per cent) after adjusting for other variables known to affect stroke risk such as age, high systolic blood pressure, smoking, diabetes, heart disease, and

atrial fibrillation. (Editor's note: Homocysteine levels can be safely reduced by supplementing with folic acid and vitamins B6 and B12).

Bostom, Andrew G., et al. Nonfasting plasma total homocysteine levels and stroke incidence in elderly persons. Annals of Internal Medicine, Vol. 131, September 7, 1999, pp. 352-55

Testosterone supplementation and prostate cancer

KIRKLAND, WASHINGTON. Conventional medicine wisdom has it that high levels of male sex hormones (androgens) are associated with an increased risk of prostate cancer and a more rapid tumour growth. This has led to the use of chemical or physical castration in an attempt to reduce natural androgen production and thereby deprive the tumour of the androgen it supposedly requires to keep growing. Unfortunately, the effect of castration is often temporary and subsequent tumours tend to be more virulent than the original one.

Now Dr. Richmond Prehn, MD of the University of Washington challenges the assumption that high androgen levels are a risk factor for prostate cancer. Dr. Prehn points out that androgen levels decline with age whereas prostate cancer incidence rises sharply. He suggests that declining androgen levels may not

only lead to benign prostate hyperplasia (BPH), but may also be the initiator of uncontrolled cell growth which may ultimately lead to cancer. He further suggests that "androgen supplementation beginning early in the middle years might, among other possible benefits, largely prevent prostate cancer." Dr. Prehn cautions that androgen supplementation may be contra-indicated in older men who already have the seeds of prostate cancer. He also suggests that an alternating regimen of androgen deprivation and androgen supplementation should be evaluated as a therapy for prostate cancer.

Prehn, Richmond T. On the prevention and therapy of prostate cancer by androgen administration. Cancer Research, Vol. 59, September 1, 1999, pp. 4161-64

Vitamin B12 deficiency and breast cancer

BALTIMORE, MARYLAND. Researchers at the Johns Hopkins University report that women with breast cancer tend to have lower vitamin B12 levels in their blood serum than do women without breast cancer. The researchers determined vitamin B12 concentrations in blood samples obtained in 1974 and in 1989 and compared the levels found in 195 women who later developed breast cancer with the levels found in 195 women free of cancer. They found that postmenopausal women with the lowest serum levels of vitamin B12 had a 2.5-4.0 times greater likelihood of being in the breast cancer group than did women with the highest levels. The researchers found no correlation between breast cancer risk and serum levels of folic acid, vitamin B6, and homocysteine.

In a subsequent review of the findings Dr. Sang-Woon Choi, MD of Tufts University points out that serum levels of folate are a poor indicator of levels in tissues and that it may well be that there is a correlation between folate levels in breast tissue and breast cancer risk. Dr. Choi speculates that a vitamin B12 deficiency may lead to breast cancer because it could result in less folate being available to ensure proper DNA replication and repair.

Wu, K., et al. A prospective study of folate, B12, and pyridoxal 5'-phosphate (B6) and breast cancer. Cancer Epidemiol. Biomarkers Prev., Vol. 8, March 1999, pp. 209-17

Choi, Sang-Woon. Vitamin B12 deficiency: a new risk factor for breast cancer? Nutrition Reviews, Vol. 57, August 1999, pp. 250-60

Licorice may kill your sex life

PADUA, ITALY. Licorice is widely used as a flavouring agent in candies, breath mints, and throat lozenges. The active ingredient in licorice, glycyrrhizic acid, has strong hormonal effects and can block the conversion of androstenedione to testosterone. Researchers at the Universities of Padua and Sassari now report that men who eat licorice may lower their testosterone levels enough to decrease their libido (sex drive). The experiment involved seven normal young men who consumed seven grams of a commercial licorice preparation daily for seven days. The glycyrrhizic acid content of the licorice tablets was 0.5 gram. The men had blood samples drawn at the start of the experiment, four days and seven days into the experiment, and four days after its conclusion.

The average serum level of testosterone before licorice ingestion was 740 ng/dL; after four days it had dropped to 414 ng/dL, and after seven days it was 484 ng/dL. The value four days after cessation of licorice intake reverted back to normal (704 ng/dL). The researchers conclude that licorice even in the small amounts eaten by many people can cause a significant drop in testosterone levels in men and this in turn can result in a loss of libido and other sexual dysfunctions. Licorice consumption has also been linked to the development of hypertension. *Armanini, Decio, et al. Reduction of serum testosterone in men by licorice. New England Journal of Medicine, October 7, 1999, p. 1158 (letter to the editor)*

Lutein may prevent cataracts

BOSTON, MASSACHUSETTS. Cataracts are common among older people and it is estimated that more than one million surgical operations are performed in the United States every year to remove them. It is generally agreed that cataract formation involves oxidation of lens tissue and that dietary antioxidants may prevent or delay this oxidation.

Researchers at the Harvard Medical School now report that the carotenoids lutein and zeaxanthin may be particularly effective in preventing cataracts. Their studies involved almost 80,000 female nurses and over 35,000 male health professionals who were enrolled in 1980 and 1986 respectively. The female study group completed diet questionnaires in 1980 and 1984 and were then followed up until 1992 at which time 1471 cataract extractions had been performed. The male group completed diet questionnaires in 1986 and were followed up until 1994 at which time 840 cataract extractions had been performed.

The researchers found that nurses with a high intake of lutein and zeaxanthin had a 22 per cent lower risk of cataract extraction than did women

with the lowest intake. Among the men, the 20 per cent with the highest intake had a 19 per cent lower risk when compared with the 20 per cent with the lowest intake. The researchers found a significant protective effect of spinach, kale and broccoli, but found no significant effects of other carotenoids and could not confirm a previously reported protective effect of vitamin A. They conclude that lutein and zeaxanthin may reduce the risk of cataract formation and recommend daily consumption of fruits and vegetables high in carotenoids.

Chasan-Taber, Lisa, et al. A prospective study of carotenoid and vitamin A intakes and risk of cataract extraction in US women. American Journal of Clinical Nutrition, Vol. 70, October 1999, pp. 509-16

Brown, Lisa, et al. A prospective study of carotenoid intake and risk of cataract extraction in US men. American Journal of Clinical Nutrition, Vol. 70, October 1999, pp. 517-24

Mares-Perlman, Julie A. Too soon for lutein supplements. American Journal of Clinical Nutrition, Vol. 70, October 1999, pp. 431-2 (editorial)

Egg yolks - A good source of lutein

BOSTON, MASSACHUSETTS. Research has shown that a high intake of the carotenoids lutein and zeaxanthin helps protect against the development of cataracts. Both lutein and zeaxanthin tend to accumulate in the macular region of the retina and are also believed to play a role in the prevention of age-related macular degeneration. There is evidence that carotenoids including lutein and zeaxanthin are absorbed better in the presence of fats and that zeaxanthin is poorly absorbed from cooked vegetables (spinach and corn). Blood levels of lutein can be increased through supplementation and zeaxanthin supplements may also be effective.

Researchers at Tuft University now report that chicken egg yolks are an excellent source of bioavailable lutein and zeaxanthin. Their small study involved six men and five women, aged between 46 and 78 years, who had moderately high cholesterol levels. The study participants were fed four different diets for 4.5 weeks with a two-week or longer wash-out period between the different diets. Each diet contained 29-33 per cent of energy as fat. Diet 1 contained 20 per cent of energy as beef tallow; diet 2 contained

20 per cent as corn oil; diet 3 was diet 1 with the daily addition of 1.3 cooked egg yolks providing 300 mg/day of cholesterol; diet 4 was diet 2 with 1.3 cooked egg yolks added per day. Fasting blood samples analyzed at the end of each diet phase showed an increase of 28 per cent and 142 per cent for lutein and zeaxanthin respectively in the diet 3 phase and 50 per cent and 144 per cent respectively at the end of the phase 4 diet. Blood levels of low density cholesterol (LDL) also increased during diets 3 and 4 by 8-11 per cent.

The researchers conclude that the consumption of egg yolks is a very effective way of raising blood levels of lutein and zeaxanthin and possibly help prevent macular degeneration. They caution that eating 1.3 egg yolks per day may increase overall cholesterol levels by 5 per cent (0.3 mmol/L) and LDL levels by 8-11 per cent. NOTE: This study was funded in part by the Egg Nutrition Center.

Handelman, Garry J., et al. Lutein and zeaxanthin concentrations in plasma after dietary supplementation with egg yolk. American Journal of Clinical Nutrition, Vol. 70, August 1999, pp. 247-51

DHEA helps alleviate adrenal insufficiency

WUERZBURG, GERMANY. Adrenal insufficiency involves a progressive destruction of the adrenal gland and is characterized by fatigue, weakness, anorexia, nausea, weight loss, and hypotension. The disease is usually treated with cortisone, prednisone, and fluorocortisol. Researchers at the university hospitals in Wuerzburg and Munich now report that oral supplementation with DHEA (dehydroepiandrosterone) can markedly improve the well-being of women suffering from adrenal insufficiency.

The study involved 24 women aged 23 to 59 years who had suffered from adrenal insufficiency for anywhere from 2 to 37 years. Fourteen of the women had primary adrenal insufficiency (Addison's disease) while the remaining 10 had secondary adrenal insufficiency (six as a result of pituitary surgery). The women were randomly assigned to receive either a 50 mg DHEA tablet or a placebo daily

for a four-month period; this was followed by a one-month wash-out period and then the alternative treatment for another four months.

Hormone levels were measured at baseline, after one and four months of DHEA therapy, after one and four months of placebo, and one month after the end of the last treatment period. Psychological evaluations were performed at each visit to the laboratory using five different validated questionnaires.

All the women had low blood serum concentrations of DHEA, DHEA-sulfate, and active androgens at baseline, but these increased to normal or near-normal levels after treatment with DHEA. Serum IGF-1 concentrations (in women with primary insufficiency) increased significantly during the DHEA treatment while total and HDL cholesterol levels decreased. Overall well-being improved substantially after four months of treatment, anxiety and depression scores declined

significantly, and sexuality scores (sexual thoughts and interest, and satisfaction with both mental and physical aspects of sexuality) increased very markedly. The researchers conclude that DHEA improves well-being and sexuality in women with adrenal insufficiency.

In an accompanying editorial Dr. Wolfgang Oelkers, MD of the Benjamin Franklin Clinic in Berlin says "it is now justifiable to prescribe a daily dose of 25 to 50 mg of DHEA as long-term treatment in patients with adrenal insufficiency whose strength and well-being are subnormal, provided that they are monitored for breast or

prostatic cancer." Dr. Oelkers also suggests that DHEA supplementation may reduce the risk of osteoporosis in rheumatoid arthritis and systemic lupus erythematosus patients.

Arlt, Wiebke, et al. Dehydroepiandrosterone replacement in women with adrenal insufficiency. New England Journal of Medicine, Vol. 341, September 30, 1999, pp. 1013-20

Oelkers, Wolfgang. Dehydroepiandrosterone for adrenal insufficiency. New England Journal of Medicine, Vol. 341, September 30, 1999, pp. 1073-74 (editorial)

Echinacea for the common cold

MADISON, WISCONSIN. The common cold and other upper respiratory infections (URIs) are the most frequently occurring acute illnesses in the developed world. It is estimated that the average adult American has two to four colds per year while the average school child in the United States suffers as many as six to ten colds every year. Conventional medical science has little to offer for preventing and treating uncomplicated URIs as most of them are caused by viruses and do not respond to antibiotics.

Native Americans used the herb *Echinacea* to treat a variety of illnesses including URIs at least as early as the middle of the 18th century. *Echinacea* is also very popular in Europe and is approved in Germany as a herbal drug for treating URIs and urinary tract infections. It is estimated that German physicians write more than three million prescriptions for *Echinacea* every year. In 1909 an article in the *Journal of the American Medical Association* stated that *Echinacea* was "deemed unworthy of future consideration" and since then the herb has not received much attention by North American physicians. This, however, has not prevented Americans from using *Echinacea*. It is estimated that at least \$400 million is spent on this preparation in the United States every year.

Researchers at Bastyr University and the University of Wisconsin have just released the result of a study which concludes that *Echinacea* is indeed highly effective in the treatment of URIs. The researchers evaluated the results of nine treatment trials and four prevention trials and concluded that taking *Echinacea* at the first sign of a cold can reduce the severity of the illness by 50 per cent or more and can cut the duration in half. A typical treatment protocol involves taking 20 drops of *Echinacea* extract every two hours for the first day and then 20 drops three times per day until symptoms are resolved.

The researchers did not find any convincing evidence that long-term supplementation prevents URIs and caution that, although *Echinacea* is generally considered entirely safe, there are no studies which specifically address the safety in regard to infants, children or pregnant women. They conclude that "the evidence suggests *Echinacea* taken early in the course of an illness may be safe and effective in reducing the severity and duration of the common cold."

Barrett, Bruce, et al. Echinacea for upper respiratory infection. Journal of Family Practice, Vol. 48, August 1999, pp. 628-35

Vegetarians are vitamin B12 deficient

SYDNEY, AUSTRALIA. It is generally assumed that vitamin B12 deficiencies are rare among people consuming a varied diet. However, there

is some question whether vegetarians get enough B12 as it is not present in plants. Researchers at the Sydney Adventist Hospital

have just completed a study aimed at resolving this question. Their study involved 245 Adventist ministers who were either lactoovovegetarians or vegans. The average age of the ministers was 46 years (range 22 to 80 years) and most of them had been vegetarians for over 20 years. The study participants filled out a diet questionnaire and had a fasting blood sample drawn for a 20-test biochemical profile including vitamin B12 concentrations. The mean vitamin B12 level was 199 pmol/L and 73 per cent of the ministers had a level below the recommended lower limit of 221 pmol/L. Vitamin B12 concentrations were also measured in a control group of 53 ministers who consumed fish, poultry or red meat on a regular basis. In this group 40 per cent had vitamin B12 concentrations below the

recommended lower limit; this indicates that vitamin B12 deficiency is widespread even among non-vegetarians.

Additional tests showed that the vitamin B12 deficiencies observed among lactoovovegetarians were due to dietary deficiencies rather than to malabsorption. The researchers conclude that as many as 73 per cent of Australian vegetarians are vitamin B12 deficient and recommend that they increase their intake either from vitamin B12-containing foods (animal products), from supplements or from vitamin B12-fortified foods.

Hokin, Bevan D. and Butler, Terry. Cyanocobalamin (vitamin B-12) status in Seventh-day Adventist ministers in Australia. American Journal of Clinical Nutrition, Vol. 70, September 1999, pp. 576S-78S

Fish oils help prevent sudden cardiac death

AALBORG, DENMARK. Sudden cardiac death (SCD) is now the most common cause of death in the Western world. SCD is often caused by ventricular arrhythmias in patients with heart disease, but may also occur among previously healthy people. The risks of arrhythmias and SCD are closely tied in with heart rate variability (HRV) with a high variability index corresponding to a lower risk. It would also appear that the risk of SCD can be substantially reduced by an increased consumption of fish. Some very recent research has shown that survivors of a first heart attack can avoid having a second one by supplementing with fish oils. An obvious question is whether there is a connection between heart rate variability and fish oil intake or not.

Danish researchers at the Aalborg Hospital are convinced that there is indeed a very close connection - at least in men. Their recently released study involved 25 women and 35 men who were generally healthy and took no medications. The participants were randomized into three groups. Group 1 was given 10 fish oil capsules daily providing a total of 6.6 grams of n-3 polyunsaturated fatty acids (3.0 g eicosapentaenoic acid [EPA] and 2.9 g docosahexaenoic acid [DHA]); group 2 was given three fish oil capsules (0.9 g EPA and 0.8 g DHA) plus seven olive oil capsules daily, and group 3, the control group, was given 10 olive oil

capsules daily. The study participants gave fasting blood samples and had their HRV measured with a Holter recorder for 24 hours at the start of the study and after 12 weeks of supplementation.

The researchers found that fish oil supplementation significantly increased the concentration of EPA and DHA in both blood platelets and granulocytes and that this increase was highly dose-dependent. They also found a significant, dose-dependent reduction in triacylglycerols, but no significant changes in total, LDL or HDL cholesterol levels. The 24-hour Holter recordings showed a correlation between heart rate (pulse rate) and blood level of EPA and DHA with a higher level corresponding to a lower pulse rate in both men and women. There was also a very significant association between DHA level in men and SDNN. SDNN (the standard deviation of all normal R-R intervals during the 24-hr Holter recording) is an important index of HRV with higher values indicating greater heart rate variability. The researchers conclude that supplementation with fish oils, especially DHA, may help prevent arrhythmias and sudden cardiac death in healthy men. They found no association between EPA/DHA levels in women and HRV, but urge further studies to confirm this seeming lack of effect.

Christensen, Jeppe Hagstrup, et al. *Heart rate variability and fatty acid content of blood cell membranes: a dose-response study with n-3 fatty*

acids. American Journal of Clinical Nutrition, Vol. 70, September 1999, pp. 331-37

Vitamin E deficiency widespread in the United States

ATLANTA, GEORGIA. Researchers at the Centers for Disease Control and Prevention have just released the results of a study aimed at determining vitamin E status among Americans. The study involved over 16,000 American men and women aged 18 years or older whose blood serum was analyzed for vitamin E (alpha-tocopherol) content. The mean value was 26.8 micromol/L, but varied between 0.65 and 232 micromol/L. A value below 20 micromol/L indicates deficiency. Further analysis showed that 26 per cent of white men and women, 41 per cent of African Americans, and 28 per cent of Mexican Americans were deficient in vitamin E.

The researchers point out that African Americans have a much higher incidence of fatal heart disease (37 per cent higher among men and 63 per cent higher among women) than do whites and speculate that this could be due, at least in part, to a vitamin E deficiency. They also point out that vitamin E deficiencies have

been linked to diabetes, immune disorders, AIDS, muscle damage in exercise, Parkinson's disease, eye diseases, and lung and liver diseases.

The researchers speculate that an increased vitamin E intake among the American population in general and African Americans in particular may have a beneficial effect on cardiovascular disease mortality. They believe that intake of more than 50 mg (IU) per day may be required and point out that studies showing cardiovascular disease benefits have used daily doses of 400-800 IU. They also suggest that people who have a high intake of polyunsaturated fatty acids may benefit from an added vitamin E intake.

Ford, Earl S. and Sowell, Anne. Serum alpha-tocopherol status in the United States population: findings from the Third National Health and Nutrition Examination Survey. American Journal of Epidemiology, Vol. 150, August 1, 1999, pp. 290-300

Vitamin K deficiency in cystic fibrosis

TORONTO, CANADA. Cystic fibrosis (CF) is often accompanied by pancreatic insufficiency (inability to absorb fat and fat-soluble vitamins through the intestines). CF patients routinely receive supplements of vitamins A, D and E, but it is still controversial whether vitamin K, another fat-soluble vitamin, should also be supplemented.

Now researchers at Toronto's Hospital for Sick Children provide convincing proof that most CF patients with pancreatic insufficiency do indeed suffer from a vitamin K deficiency and that supplementation may be beneficial.

The study involved 83 CF patients with pancreatic insufficiency (average age of 15.2 years), 15 patients who were pancreatic sufficient (average age of 26.2 years), and 62 healthy controls (average age of 16.2 years). The researchers measured vitamin K status in all participants by determining the amount of incompletely carboxylated proteins (proteins

induced by a vitamin K deficiency) in blood plasma. All control subjects had a concentration below three micrograms/liter. CF patients with pancreatic insufficiency had a considerably higher average level of these so-called PIVKA-II proteins varying from 46.6 micrograms/liter for patients with liver disease to 15.3 micrograms/liter for those without liver disease. The average PIVKA-II level for CF patients without pancreatic insufficiency was moderately elevated at 3.4 micrograms/liter. All told, 78 per cent of pancreatic insufficient CF patients had elevated PIVKA-II levels indicating a significant vitamin K deficiency.

The researchers recommend that routine vitamin K supplementation be considered in all cystic fibrosis patients with pancreatic insufficiency. NOTE: This study was supported in part by Scandipharm Inc. and Janssen Pharmaceutica.

Psyllium benefits diabetics

LEXINGTON, KENTUCKY. Psyllium is a viscous, mostly water-soluble fiber obtained by mechanical removal of the husk from *Plantago ovata* seeds. Psyllium fiber preparations have a long history of use as laxatives and there is also evidence that they may be useful as cholesterol-lowering agents and for improving glucose control in non-diabetic individuals.

Researchers at the University of Kentucky now report that psyllium fiber is highly effective in reducing cholesterol levels and improving glycemic control in patients suffering from type 2 diabetes. Their experiment involved 34 diabetic men with moderately high cholesterol levels. The men were randomly assigned to receive either 5.1 grams of psyllium (Metamucil) or 5.1 grams of cellulose placebo taken 20-30 minutes before the morning and evening meals. The participants had their cholesterol and blood glucose levels evaluated at the start of the study and after eight weeks of supplementation. The evaluations were performed during a three-day stay in a metabolic ward. The patients consumed a standard diabetic diet (less than 30 per cent of total energy as fat, less than 10 per cent of energy as saturated fat, and 55 per cent or more as carbohydrate) throughout the experiment.

Analysis of the data collected during the study showed that the patients in the psyllium group had improved their glucose control very considerably when compared to the placebo group. This improvement was particularly noticeable in the measurement of blood glucose after lunch. In the psyllium group there was a 4.2 per cent decrease in post-lunch glucose concentration in week eight as compared to baseline (week 0). In comparison, the post-lunch glucose level increased by 12.7 per cent in the placebo group over the test period. Cholesterol levels were also lower in the psyllium group after eight weeks of supplementation, 8.9 per cent for total cholesterol, and 13 per cent for LDL cholesterol when compared to the placebo group.

The researchers conclude that addition of psyllium to the diet is safe and well-tolerated and significantly improves glucose control in patients with type 2 diabetes while at the same time lowering LDL and total cholesterol levels. NOTE: This study was supported by the Procter & Gamble Co., makers of Metamucil.

Anderson, James W., et al. Effects of psyllium on glucose and serum lipid responses in men with type 2 diabetes and hypercholesterolemia. American Journal of Clinical Nutrition, Vol. 70, October 1999, pp. 466-73

Benefits of phosphatidylserine

HONOLULU, HAWAII. Phosphatidylserine occurs naturally in the body and plays a key role in maintaining the health and function of nerve cell membranes. It is found in the highest concentration in the inner layer of the membranes and appears to be intimately involved with cell-to-cell communication and the control of levels of neurotransmitters such as acetylcholine, dopamine and norepinephrine.

More than 35 clinical studies have been conducted on phosphatidylserine in Europe and the United States. One study of 149 older people found that oral supplementation with 100 mg of phosphatidylserine three times a day improved memory and the ability to concentrate.

The effect lasted four weeks after the participants stopped supplementation and was equivalent to a reversal of memory decline corresponding to about 12 years of aging.

The effect of phosphatidylserine supplementation in Alzheimer's patients has been studied in several large-scale, double-blind, randomized trials. Significant improvements in memory and learning were noted after 12 weeks of supplementation with 300 mg/day. Other studies have shown that phosphatidylserine supplementation may improve motivation, anxiety levels, and apathy scores. A very recent study suggests that phosphatidylserine may be beneficial in children

suffering from attention-deficit hyperactivity disorder. There are also indications that it is effective in lowering uric acid levels.

The recommended adult dosage for the treatment of cognitive disorders is 300 mg/day in divided doses. For preventive purposes, 100 mg/day is usually considered sufficient. Soy-derived phosphatidylserine is considered to be the safest form and it is a good idea to take fish

oil capsules with it as it needs docosahexaenoic acid in order to carry out its functions. No adverse effects have been reported with dosages of 300 mg/day and there are no known contraindications or drug interactions.

Pepping, Joseph. Phosphatidylserine. American Journal of Health-Systems Pharmacy, Vol. 56, October 15, 1999, pp. 2038-44

NEWSBRIEFS

Brain chemicals unmasked. Neuroscientists at the University of New Mexico have discovered that two brain chemicals appear to have a direct effect on intelligence. The researchers measured the brain levels of N-acetyl-aspartate (NAA) and choline in 26 healthy college students and then subjected them to an IQ test. Students with low levels of choline and high levels of NAA scored significantly higher on the IQ test than did students with low NAA levels and high choline levels. NAA is found only in neurons and is thought to contribute to their healthy functioning while choline is present in the nerve cell membranes and is believed to be essential for the repair of damaged nerve cells. The researchers speculate that a low NAA level and a high choline level indicates a high rate of neuron damage and a subsequent decline in IQ and cognitive function. They suggest that it may be possible to improve intellectual performance by manipulating NAA and choline levels with supplements.

Air fresheners can make you sick. New evidence suggests that air fresheners are bad for babies and pregnant women. Epidemiologists at the University of Bristol surveyed 14,000 pregnant women and discovered that those who used an aerosol or air freshener most days suffered 25 per cent more headaches than those who used them less than once a week. Frequent users also experienced a 19 per cent increase in postnatal depression. Young babies (less than six months old) who were exposed to air fresheners most days were found to suffer 30 per cent more ear infections and 22 per cent more instances of diarrhea than babies who were exposed less than once a week. Air fresheners and aerosols contain toxic organic compounds such as xylene, ketones,

and aldehydes which may weaken the body's defences by making the skin more permeable. Another study at an indoor air pollution conference in Edinburgh reported that mice exposed to the vapours from a solid air freshener experienced breathing difficulties.

Barometric pressure affects the brain. Many people believe that weather patterns influence their mood and alertness. Now researchers at the Kiev University provide a scientific explanation for this phenomenon. The researchers found that atmospheric disturbances such as storms can cause the air pressure to fluctuate several times a minute. These atmospheric pressure perturbations or APPs can apparently affect heart rate and mental ability. A higher intensity of APPs can cause peoples' hearts to beat faster and can decrease their ability to perform tasks which require mental concentration. A study involving 12 volunteers who were exposed to artificially-generated APPs found that sleepy or tired volunteers did worse in the presence of APPs while alert volunteers did better. A controlled air pressure pulsation twice a minute greatly improved the capability to recall objects and proof read texts. The Russian researchers speculate that the body constantly senses the atmospheric pressure and changes blood pressure accordingly and in doing so affects neural activity.

Milk is a potent fungicide. Powdery mildew is a major problem for organic farmers growing cucumbers and zucchini. It damages the plants by causing the leaves to shrivel up. Wagner Bettiol, a researcher at the Brazilian Agricultural Research Corporation, now reports that spraying heavily infested plants twice a week with a

mixture of one part cow's milk to nine parts water is more effective in eliminating the powdery mildew than are chemical fungicides such as fenarimol and benimol. One test showed that after two to three weeks of spraying with milk the affected area of leaves was six times smaller than a similar area treated with chemical fungicides. Dr. Bettiol speculates that milk kills some microorganisms and that its content of potassium phosphate boosts the plants' immune systems and helps them withstand the mildew better.

Genetic engineering products under fire.

The massive resistance to genetically engineered agricultural products in Europe, Japan, Australia, and New Zealand is having serious repercussions in the American Midwest. Major food processors now require American farmers to segregate natural and genetically modified soy and corn (maize) crops as the demand for non-modified crops sky-rockets. The costs involved in doing this may nullify or even override the expected productivity improvements made feasible by the ability of genetically modified plants to withstand the indiscriminate use of powerful weed killers like Monsanto's Round-Up. There is a real possibility that prices for genetically engineered soy and corn could plummet and that the whole market for genetically modified corn could collapse as early as next year. The resistance to the products continues to grow. Two major Japanese breweries (Kirin and Sapporo) recently announced that they would stop using genetically modified corn in their products.

Adding to the woes of the biotechnology companies is an announcement that a lawsuit against Monsanto, DuPont, and Novartis will be filed in 30 countries. The suit alleges that the companies are restricting farmers' freedom to choose the seeds they plant.

How safe are "organic" insecticides?

Bacillus thuringiensis (Bt) is a widely used pesticide and is considered entirely innocuous to mammals including people. It is the only designated insecticide permitted on organic produce in the UK. More than 500 tonnes of the bacteria are sprayed on crops and trees every year in the United States alone. Bt is very similar (nearly identical in DNA) to *B. cereus* which can cause diarrhea, vomiting, and respiratory problems in humans. Bt is also a very close cousin to *B. anthracis* the bacterium that causes anthrax, a potentially fatal disease that can affect both humans and farm animals. Bt expert Lars Andrup of the National Institute of Occupational Health in Copenhagen now warns that Bt is able to exchange DNA with other *Bacillus* species such as *B. cereus* and *B. anthracis*. Says Dr. Andrup "The potential for spawning very dangerous strains and unleashing them into the environment is clearly there." Canadian government researchers have found that, at concentrations similar to aerial sprays, Bt killed human cells in culture by producing toxins that behaved like those produced by *B. cereus*. Not surprisingly, both the manufacturers of Bt and US government agencies insist that the insecticide is entirely safe.

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