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## Our January 2008 Newsletter for Healthy Living

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### Quality of life

**F**ive nutrients can help older adults live independently longer, and folic acid can reduce birth defects, in a new study by The Lewin Group, an independent healthcare cost-analysis firm in Falls Church, Virginia, serving the U.S. government and industry.

Researchers reviewed the scientific literature on six nutrients—**calcium with vitamin D, omega-3 fatty acids, lutein with zeaxanthin, and folic acid**—concluding that many high-quality studies show **clear relationships between the supplements and better health**. Study authors stated, “A growing body of scientific research is beginning to provide important clues about how diet choices affect health.”

Doctors cited evidence that **1,200 mg of calcium with vitamin D per day reduced bone loss and hip fractures in the elderly**, cut

hospital trips to repair the hip, and reduced stays at skilled nursing care facilities.

Focusing on heart studies, researchers found that **1,800 mg of omega-3s per day effectively cut risk of coronary events** including heart attack, restricted heart blood flow, fat and calcium deposits on blood-vessel walls, inflammation, and blockages.

Lutein and zeaxanthin—the yellow-colored antioxidants that collect in the eye and protect vision—are essential nutrients that must come from the diet. Researchers determined that taking **6 mg to 10 mg of lutein with zeaxanthin per day significantly reduced risk of going blind in the center of the**

**field of vision** (age-related macular degeneration, or AMD), a major cause of older adults losing the ability to live independently. Doctors believe poor vision causes 18% of all hip fractures.

If one-quarter of the 44 million U.S. women of child-bearing age who do not take folic acid began taking **400 mcg of folic acid** per day, 600 babies could be born without neural tube defects, researchers stated.

If those at risk for bone, heart, eye, and birth diseases took these supplements during the five years from 2008 to 2012, researchers project \$24 billion in health savings to Medicare and others.

Reference: *Effect of Selected Dietary Supplements on Health Care Cost Reduction—Study Update*. June, 2007, The Lewin Group.



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#### News & Research This Issue

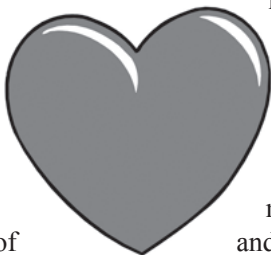
- **Nutrients** improved many aspects of **health**.
  - **Genistein** increased **BMD** in **postmenopausal women**.
  - **Multivitamins** improved **attitude** in **acutely ill older people**.
  - **Diabetics** may need more **thiamine**.
  - **Omega-3s** improved **behavior** in **ADHD**.
  - **Probiotics** raised **survival rates** in **burn victims**.
  - **Zinc** increased levels of **vitamin A**.
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## Hearts, bones, and blood sugar

**G**enistein, the plant-based antioxidant, **helped control blood sugar, reduced risk for heart disease, and increased bone mineral density (BMD) in postmenopausal women**, in two new studies.

Researchers from the University of Messina, in Messina, Italy, recruited 389 otherwise healthy postmenopausal women, aged 47 to 67, with low BMD scores—between -1 and -2.5—a condition known as osteopenia. Scores below -2.5 indicate osteoporosis. The women ate a low-soy, low-fat diet for the first four weeks, and then took a placebo or 54 mg of genistein per day for the next 24 months. All participants also took daily doses of **calcium and vitamin D3**.

At the beginning of the study, and at 12 and 24 months, research-



ers measured blood fats, sugar, how well the cells used insulin to convert sugar into energy (insulin sensitivity), and risk factors for heart disease including signs of blood clotting, oxidation, and inflammation. After 12 and 24 months, compared to placebo, **the genistein group had significantly lower blood sugar levels and increased insulin sensitivity**. After 24 months, compared to placebo, the genistein group had more normal clotting and less oxidation. Doctors noted that the genistein group had no change in blood fats, and that there was slightly more inflammation compared to placebo, and concluded that **genistein plus calcium and vitamin D3, along with a healthy diet, improved blood sugar control and reduced some risk factors for heart disease in postmenopausal women with osteopenia**.

In the second study, using the same 389 women in the first study, researchers measured signs of bone forming and breaking down in the blood and urine, how well the pituitary gland regulated calcium, and the thickness of the uterine lining, a cancer-risk factor. **At 24 months, the genistein group had increased BMD while the placebo group had lost BMD**. Genistein produced no change in thickness of the uterine lining and, compared to placebo, **the genistein group had fewer signs of bone breaking down and more signs of bone forming**. Doctors noted that some participants reported gastrointestinal side effects and discontinued the study—19% in the genistein group, 8% for placebo—and concluded that genistein improved BMD in postmenopausal women with osteopenia.

Reference: *Annals of Internal Medicine*: June, 2007; Vol. 146, No. 12, 839-47.

## Better mood

**M**ultivitamin supplements **significantly improved mood and attitude in acutely ill older adults**, according to results from a new study.

Researchers recruited 225 hospitalized acutely ill older adults, average age 76, who took a 400 milliliter oral multivitamin supplement per day or a placebo, along with a normal hospital diet, for six weeks. The multivitamin provided 100% of the UK Reference Nutrient Intake for healthy older persons and about 1,000 calories. After six weeks, those in **the multivitamin group had significantly increased levels of folate in red blood cells and vitamin B12 in blood plasma**, while these nutrients decreased in

the placebo group. The researchers noted that many studies have linked low folate and vitamin B12 to depression, and said, “Both folate and vitamin B12 are important for the nervous system at all ages, but in older people where deficiencies are known to be common even in relatively healthy persons, low folate and vitamin B12 status affects mood, cognitive [mental], and social functions.”

At six months, **those in the multivitamin group reported significantly better depression test scores** compared to placebo.



Scientists observed that depression test scores in the multivitamin group improved regardless of whether participants, at the start of the study, had reported mild or severe depression, or had not been depressed at all. “Improvement of micronutrient [vitamin and mineral] status would be the most plausible explanation for the results,” researchers stated. In discussing the reasons for the study, the authors noted that there is little research into the effects of nutritional supplements on mental health in older adults.

Reference: *Journal of Clinical Nutrition*: July 25, 2007.

# Discovery: diabetics deficient in vitamin B1

**M**ost type 1 and type 2 diabetics were deficient in vitamin B1 (thiamine), in results from a groundbreaking new study.

Researchers from the Department of Biological Sciences, University of Essex, Colchester, UK, recruited 26 type 1 diabetics and 48 type 2 diabetics—all of whom were controlling blood sugar successfully—and 20 healthy volunteers to compare against (control group), and found that, compared to the controls, type 1 and type 2 diabetics had, respectively, 76% and 75% lower blood-plasma thiamine levels.

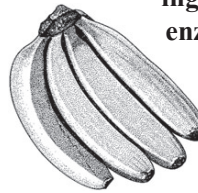
**The body needs thiamine**—a water-soluble vitamin—to convert carbohydrates into glucose, the main source of energy in the body. Traditionally in diabetes, scientists measure thiamine indirectly

through a certain thiamine-processing enzyme (transketolase), in red blood cells. If transketolase activity is normal, researchers assume there is enough thiamine.

However, lead researcher P. J. Thornalley noticed new studies finding that high doses of thiamine prevented the small-blood-vessel damage that is common in diabetes, and theorized that diabetics might need more thiamine. In this study, researchers examined how the body processes thiamine and found that, compared to the controls, **type 1 and type 2 diabetics excreted thiamine through the urine 24 times faster and 16 times faster, respectively.**

Some of the diabetics in each group also had protein in the urine,

an early sign of kidney problems common in diabetes. Researchers knew that the body uses special proteins to transport thiamine into red blood cells as part of the transketolase-enzyme process, and decided to measure these thiamine-transporting proteins, finding abnormally high transporter-protein levels. **This discovery led researchers to conclude that the thiamine-transporting proteins raised transketolase enzyme activity to normal levels, fooling scientists into believing diabetics had enough thiamine.** Thornalley is conducting more studies which may determine whether low thiamine levels cause small-blood-vessel damage, or if damaged blood vessels cause the kidneys to excrete too much thiamine.

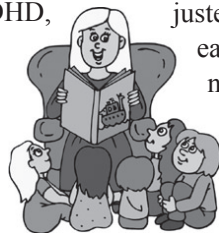


Reference: *Journal Diabetologia*: August 4, 2007.

## Omega-3s help ADHD

**B**ehavior improved in children with attention-deficit hyperactivity disorder (ADHD) who took omega-3 fatty acids, in findings from a new pilot study.

Researchers recruited six boys and three girls who had ADHD, aged 8 to 16, for this open-label study, meaning there was no placebo group. To start the study, children took a 1,620 mg combination of eicosapentaenoic acid (EPA) plus docosahexaenoic acid (DHA) per day. After four weeks, doctors measured the amount of fatty acids in the blood plasma, and compared the amount of EPA to another omega fat, **arachidonic acid (AA)**. AA is an omega-6 fatty acid, which is also an essential nutrient,



but one that researchers believe must be in balance with EPA. Scientists have found that **children with ADHD have high AA/EPA ratios, meaning there is too little EPA compared to AA.** Based on the AA/EPA ratios at four weeks, doctors adjusted the dosage of omega-3s for each child to reach a level that is normal in the Japanese population, and continued for the next four weeks. Each child, along with his or her parent, met with a psychiatrist at least three times: at the start of the study, and at four and eight weeks. Doctors measured plasma fatty acid levels at these times.

After eight weeks, all children had significantly higher plasma levels of EPA and DHA, and significantly lower AA/EPA ratios. AA had

declined from about 21 times the amount of EPA to approximately six times the amount of EPA.

The psychiatrists were unaware of the changes in dosage of omega-3s, and did not know how consistently each child had taken his or her supplements. **At eight weeks, the psychiatrists reported significant improvements in behavior including inattention, hyperactivity, oppositional and defiant behavior, and poor conduct.** Researchers noted that as the AA/EPA ratio decreased, behavior scores improved, and that these improvements were statistically significant. Study authors concluded that high doses of EPA with DHA may improve behavior in children with ADHD.

Reference: *Nutrition Journal*: July, 2007; Vol. 6, No. 16.

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## Surviving burns

**P**eople with severe burns who took probiotic supplements survived while people with similar burns who did not take probiotics died. Burn-unit doctors gave 28 people with severe second- and third-degree burns *lactobacillus acidophilus* or *lactobacillus casei* while a second group of 28 with severe burns took a placebo. Overall, compared to placebo, those who took probiotics had more blood poisoning (sepsis), but survived in greater numbers. Doctors noted **in a subgroup of the most-severely burned** (41% to 70% of total body surface) **there were zero deaths among those who had taken probiotics** compared to five deaths in the placebo group. In severe burn cases, sepsis occurs when bacteria in the gastrointestinal tract escape into the bloodstream, often causing illness and death.



Reference: *Journal: Burns*: August, 2007; Vol. 33, No. 5, 594-8.

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### This Month's **HEALTHY Tip**

**Z**inc supplements increased vitamin A levels in older adults, according to a new study. Researchers recruited 387 men and women, aged 55 to 85, who took a placebo, 15 mg of zinc—which is the U.S. Recommended Dietary Allowance—or 30 mg of zinc per day, for six months. Researchers measured blood-plasma levels of vitamin A (retinol) at the start of the study, and at three and six months, and found that **levels of vitamin A increased as the zinc dosage and length of treatment time increased**. In explaining the reason for the study, researchers noted that low zinc levels can prevent the body from absorbing vitamin A.



Reference: *European Journal of Clinical Nutrition*: July 11, 2007.

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