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THE NEWSLETTER THAT REPORTS VITAMIN AND MINERAL THERAPIES

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It May Not Be the Wine So Much As It Is The Flavonoids...And Vitamin E

At least eight medical studies have suggested that a glass or two of wine daily protects against heart disease. One reason is that ethanol, the alcohol found in wine, might reduce the tendency for blood platelet cells to aggregate, or clot. Other studies, however, have found that red wine seems to be more protective than white wine, suggesting that some of the benefits might be unrelated to the alcohol.

What's a teetotaler to do? Drink purple (or red) grape juice, say some researchers. It may be every bit as good as red wine, because both beverages are rich in a group of powerful antioxidants known as flavonoids.

In recent years, researchers have pointed to wine consumption as an explanation for "the French paradox." The French eat almost four times more butter and three times more lard, and they have higher cholesterol levels and blood pressures, than do Americans. Yet the French are 2.5 times less likely than Americans to die of coronary heart disease.

To get a better handle on the benefits of moderate wine drinking, a team of Israeli researchers compared the effects of red and white wine on 20 healthy men. Half of the subjects were given 400 milliliters of red wine and half were given 400 milliliters of white wine daily for two weeks. The amounts were roughly equivalent to two glasses, and each of the wines contained 11 percent alcohol.

Alexandra Lavy, PhD, and her colleagues focused principally on the impact of the wines on blood fats. The "most impressive effect" was the

increase in high-density lipoproteins (HDLs) among the men drinking red wine, according to Lavy's report in *Annals of Nutrition and Metabolism* (Sept/Oct 1994;38:287-94).

Their HDL levels rose by 26 percent and their apolipoprotein A-1 levels, related to HDL, increased 12 percent by the end of the study. HDL, of course, is considered the "good" form of cholesterol since it appears to protect against coronary heart disease. No HDL changes were seen among the white-wine drinkers.

Another positive sign was that all of the subjects had significant increases in blood carotenoid levels after drinking wine. It was not clear, however, whether the carotenoids were in the wine or whether the wine increased their absorption from the diet. On the negative side, red-wine drinkers had a 26 percent increase in

triglyceride levels, considered a heart risk factor. And in this case, the researchers found no decrease in platelet aggregation among either the red- or white-wine drinkers.

The value of the flavonoids—regardless of the source—was confirmed by John D. Folts, PhD, director of the coronary thrombosis laboratory at the University of Wisconsin, Madison. "Numerous studies have attributed the observed cardioprotective effects of alcohol consumption to an increase in plasma HDL cholesterol levels, yet some scientists believe that a higher HDL cholesterol level does not fully explain the cardioprotective effects of moderate alcohol consumption," Folts wrote in *Circulation* (Feb 15, 1995;91:1182-8). So Folts and his associates fed dogs red wine, white

Continued on page 4

B Vitamin May Have Been at the Origin of Life

Just how did life begin on Earth some 3.5 billion years ago?

Researchers at the University of California, San Diego, have suggested that pantetheine, the naturally occurring form of the B-vitamin pantothenic acid, may have been instrumental.

Pretty heady stuff for a humble vitamin.

Pantetheine forms the lion's share of the molecule making up coenzyme A, a substance that helps amino acids link together. Coenzyme A is essential for the creation of deoxyribonucleic acid (DNA) and ribonucleic acid (RNA), which carry and transmit the genetic code.

According to chemist Stanley L.

Miller, PhD, and his colleagues, the chemical components of pantetheine were likely abundant in the "prebiotic soup"—Earth's oceans before the advent of life. The chemicals include pantoyl lactone, beta-alanine, and cysteamine.

"These components are extremely soluble and so would have been preferentially concentrated in evaporating bodies of water, for example on beaches and at lagoon margins," wrote Miller and his colleagues in *Nature* (Feb. 23, 1995;373:683-5). Baked by the sun, they would have formed pantetheine, much the way Keefe and his colleagues created it in the laboratory. □

Vitamins Gain Momentum in Cancer Treatment

Antioxidant vitamins, known to prevent many types of cancer, are increasingly being used to *treat* cancers. That was the point of a recent article in a generally conservative, mainstream science news magazine.

"Many people, including cancer specialists, now take supplements of antioxidants common in fruits and vegetables. And some physicians give them to patients in hopes of preventing or curing cancer," wrote reporter Tina Adler in *Science News* (April 22, 1995;147:248-9).

Despite the recognition that nutrients, such as beta-carotene, prevent cancer, the use of micronutrients in treating cancer has generally been frowned on by the medical establishment. Nonetheless, a small number of physicians and researchers—including Abram Hoffer, MD, PhD, and the late Linus Pauling, PhD—urged the use of vitamin C and other micronutrients in treating cancer patients.

The *Science News* article, which quoted experts at major research institutions around the country, reflects an important shift in how vitamins are perceived in medicine. Some people have referred to the 25-year-old federal war on cancer as a "medical Vietnam."

Vitamin advocates generally believe that vitamins A, C, and E and the carotenes reduce free radical damage to deoxyribonucleic acid (DNA), which contains the molecular blueprint for life and growth. Free radicals are a normal byproduct of metabolism, but environmental pollutants tend to increase free radical damage to the body.

In addition, antioxidant nutrients seem to disable cancer cells and stimulate the immune system's response to them. The growth of a tumor also depends on angiogenesis—that is, its ability to develop a network of blood vessels that feed only the tumor. Vitamin E and

glutathione slow tumor growth partly by preventing angiogenesis.

A team of researchers at the Memorial Sloan-Kettering Cancer Center, New York, has been using trans retinoic acid (related to vitamin A) to successfully treat patients with acute promyelocytic leukemia, according to the *Science News* article. In addition, animals given beta-carotene supplements develop fewer precancerous cells and smaller tumors, according to researchers at the National Institute of Dental Research, Bethesda, Md.

Adler wrote that "a combination of vitamins C and E, beta-carotene,

and retinoic acid, used without cancer drugs, stops cells more effectively than any of the substances by itself." At the very least, megadoses of vitamins seem to work synergistically with many cancer drugs, including interferon, tamoxifen, cisplatin, and decarbazine.

Just how popular are vitamins among scientists? Adler related the following anecdote: "At a recent conference, one presenter asked the audience of about 2,000 scientists to raise their hands if they took vitamin supplements. About 2,000 hands went up..." □

Selenium May Prevent Arrhythmias

Magnesium has been well-documented in the treatment of arrhythmia, those erratic heart beats that can cause sudden death syndrome. A report now indicates that selenium may also prevent arrhythmias.

David Lehr, MD, of the New York Medical College, related in the *Journal of the American College of Nutrition* (Oct. 1994;13:496-8) that he wrestled for years with the treatment of his own serious ventricular arrhythmias. He improved on the drug Flecainide, but still suffered occasional disabling arrhythmias. The arrhythmias stopped *one week* after Lehr began taking selenium supplements.

Coincidence? Lehr doesn't think so. In his article, he briefly reviewed the role of selenium in disease prevention, pointing out that the high death rate from heart disease along the coastal plain in Georgia was likely due to selenium deficiency in the soil. He also recommended that people on long-term weight-reduction diets and people being treated for anorexia nervosa receive selenium to prevent arrhythmias and sudden cardiac death.

"Selenium is an integral component of glutathione pero-

xidase, forming part of the active site of this peroxide-destroying enzyme which plays a critical role in the control of oxygen metabolism, particularly in catalyzing the breakdown of H₂O₂," he wrote. In selenium deficiency, moreover, accumulation of lipid peroxides may occur in many organs, causing damage to cell membranes and other oxidant sensitive cell components."

He added that "Selenium is also believed to be of benefit in [the prevention of] neoplastic, cardiovascular and neurological degenerative diseases, probably based on the concept that this trace metal may have other functions, for example in ...detoxification and the immune response."

A study exploring the role of selenium in the prevention and treatment of arrhythmias is currently underway at the Mt. Sinai Hospital, New York.

Lehr also wrote that people can consume up to 750 to 850 mcg of selenium daily without toxic effects, such as selenosis. In addition, a combination of methionine (a common amino acid) and vitamin E can prevent many signs of selenium toxicity. □

Fruit and Vegetables Reduce Risk of Stroke

The more fruit and vegetables you eat, the lower your risk of a stroke, say researchers at the Harvard Medical School.

Mathew W. Gillman, MD, and his colleagues came to that conclusion after studying a group of 832 men for more than 20 years. Of the group, 97 men suffered ischemic or hemorrhagic strokes. Ischemic strokes are caused by reduced blood flow, whereas hemorrhagic strokes are caused by a ruptured blood vessel.

In comparing the diets of the men, Gillman found that men who ate three servings of fruit or vegetables daily had a 22 percent lower risk of either type of stroke than men who ate

produce sparingly. Men eating six servings of fruit or vegetables daily reduced their risk of stroke by 44 percent.

About 500,000 Americans suffer a stroke each year, and some 150,000 of them die. According to Gillman, many of the 3 million stroke survivors suffer disabilities, and their long-term care costs about \$20 billion annually.

"Data from international epidemiologic comparisons suggest that immigrants rapidly take on the stroke incidence rates of their adopted country. Thus, environmental factors, including diet, may be important in the genesis of stroke and in the potential to prevent its occurrence," Gillman wrote in the *Journal of the American Medical Association* (April 12, 1995;273:1113-7).

He focused on food groups rather

than specific nutrients because "Nutritional advice is often easier to understand in the context of foods rather than the nutrients contained in foods. Therefore, linking foods or food groups to outcomes may be at least as important as nutrient-disease relationships."

Gillman reported that high vegetable consumption was somewhat more protective than high fruit intake. And although he focused on fruits and vegetables generically, he did point out that these foods are high in potassium and the B-vitamin folic acid. Both nutrients are known to independently reduce the risk of stroke. In addition, fruit and vegetables are high in various antioxidant nutrients, including vitamins C and E and beta-carotene, which protect blood vessels from free-radical damage. □

Trauma Patients Need Taurine

Taurine, needed in the liver to form bile salts, has long been considered a nonessential amino acid. However, people receiving long-term parenteral (intravenous) nutrition have difficulty biosynthesizing taurine from essential amino acids.

A study at Michigan State University recently sought to determine whether supplemental taurine would restore normal levels of the amino acid in trauma patients. Inadequate taurine results in cholestasis, the interruption of bile flow.

James Paauw, MD, gave 20 critically injured trauma patients 5, 10.8, or 50 mg of taurine per kilogram of body weight, or no taurine at all. The amounts were roughly equivalent to 340, 735, and 3,400 mg of taurine for a 150-pound adult.

Taurine levels were initially lower among all the trauma patients compared with healthy subjects. Serum taurine levels rose over the course of seven days among the patients receiving the higher dosages of taurine.

Continued on page 4

Zinc and Alzheimer's: A Need for Caution

Several years ago, when Australian researchers gave zinc supplements to patients suffering from Alzheimer's disease, the patients took a dramatic turn for the worse within two days. To avoid harming the patients, the study was immediately terminated.

The irony, of course, is that zinc has long been recommended—and used by some physicians—to enhance memory and other cognitive functions.

In a recent in vitro experiment, a former member of the Australian team took another look at the possible role of zinc in Alzheimer's. Ashley I. Bush, PhD, found that zinc promoted the formation of beta-amyloid plaques similar to the ones that choke and kill neural cells in the brain of Alzheimer's patients.

Bush, now at Harvard University's Massachusetts General Hospital, reported that low levels of zinc attach to beta-amyloid protein but without causing it to clump.

Higher levels, however, did cause clumping, according to his article in *Science* (Sept 1994;265:1464-7—see also p 1365).

Although the findings are disturbing, they may not be the final word. The lead investigator, Rudolph E. Tanzi, PhD, thinks that more research may be needed—after all, zinc is an essential nutrient.

If you've been taking or recommending zinc, what should you do?

Jonathan Collin, MD, editor of the *Townsend Letter for Doctors*, offered some cautious advice in the Dec. 1994 issue of his magazine. He recommended halting zinc supplementation unless a person had clear signs of zinc deficiency.

Are zinc supplements safe? "Yes, if you do not have Alzheimer's or relatives with Alzheimer's... Prudence suggests using zinc supplementation sparingly, with no more than 30 mg additional daily," Collin wrote. □

CoQ10 Protects During Heart Bypass Surgery

Sometimes, there's no way to avoid heart surgery. But a recent study has found that it's never too late to benefit from micronutrients—even when you're in the operating room.

Coenzyme Q10, well documented for its role in the prevention and treatment of heart failure, also reduces the risk of complications from bypass surgery.

CoQ10 works on two levels. It stimulates energy production in cells

and it also functions as an antioxidant.

During bypass surgery, blood flow to the heart is stopped. When it is resumed—a process called myocardial reperfusion—large numbers of free radicals are generated. These free radicals overwhelm the body's native antioxidant defenses, damage the heart, and complicate recovery.

So Massimmo Chello, MD, a professor and cardiac surgeon at the Catanzaro Medical School, Italy, gave

20 patients slated for bypass surgery 150 mg of CoQ10 daily for seven days before surgery, then compared their responses to 20 patients who did not receive the nutrient.

Chello found that the CoQ10 dramatically reduced many indicators of free radical damage compared with patients who did not receive the nutrient. In addition, patients receiving CoQ10 required less dopamine to stabilize blood pressure and had a "significantly lower incidence" of ventricular arrhythmias after surgery.

He concluded in the *Annals of Thoracic Surgery* (Nov. 1994;58:1427-32), "Our data clearly demonstrated that pretreatment with CoQ10 significantly reduced reperfusion arrhythmias in the early post-operative period." □

Wine, Grape Juice and Heart Disease...

Continued from page 1

wine, or grape juice while measuring blood-clotting factors and blood flow.

Laboratory analyses found both the red wine (Chateauf-neuf-du-Pape, 1987) and grape juice (Welch's 100 percent natural purple grape juice, without sugar, artificial flavors, or colors) to be especially high in two flavonoids, quercetin and rutin. Levels of these flavonoids were much lower in the white wine.

Folts reported that platelet aggregation was decreased and blood flow increased in the dogs after being given red wine and purple grape juice, whereas white wine provided no significant benefits. He pointed out that other researchers have documented that the flavonoids found in wine, purple grape juice, and other foods decrease platelet aggregation and dissolve existing clots.

"It is therefore possible to speculate that the cardioprotective effects of red wine consumption observed in the French and other populations may be attributed in part to the ethanol content of the wine and in part to the antioxidant and platelet inhibitory properties of other naturally occurring compounds in the wine," Folts wrote in his conclusion. "Because platelet adhesion to damaged endothelium and subsequent platelet aggregation are major steps in both thrombosis and

atherogenesis, the long-term inhibition of platelet activity by the consumption of flavonoid-containing foods and beverages may retard atherogenesis and prevent thrombosis on a daily basis."

In another recent study, researchers suggested that the high consumption of vitamin E-rich sunflower oil in France might also protect against coronary heart disease. Professor P.T. James of the Rowett Research Institute, Aberdeen, Scotland, analyzed the dietary habits and heart disease patterns in 24 countries.

The strongest correlation, according to James' study, was between high dietary levels of specifically the alpha-tocopherol fraction of vitamin E and a low incidence of coronary heart disease. "Dietary alpha-tocopherol may provide at least as good an explanation as does wine for the paradoxically low coronary heart disease in several European countries which have a relatively high saturated fatty acid intake," he wrote in the *European Journal of Clinical Nutrition* (1994;48:822-31).

Editor's note: There are many natural fruit juices on the market, and we recommend those produced by R.W. Knudsen and Sons, Chico, Calif., available at health food stores. □

Taurine...

Continued from page 3

However, even patients receiving the largest amount of taurine—25 times that obtained in a typical diet—regained only about one-half the normal level of taurine, according to Paauw's article in the *American Journal of Clinical Nutrition* (Aug. 1994;60:203-6). □

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