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Researchers Report that Zinc Inactivates Herpes Viruses, But to Different Degrees

Zinc supplements are a common remedy for fighting viral infections, but studies have found inconsistent benefits. The reason, researchers now report, may be that zinc is more effective against some strains of infecting viruses than others.

Max Arens, MD, of the Washington University School of Medicine, and Sharon Travis, PhD, of the St. Louis Children's Hospital, obtained five clinical samples (isolates) of herpes simplex-1 (HSV-1) and five clinical isolates of herpes simplex-2 (HSV-2) from patients. The isolates were from the mouth, lips, fingers, and sexual organs of men and women. Arens and Travis then cultured the viruses with different forms and dosages of zinc.

For the most part, zinc inactivated the herpes viruses. "First, we showed that zinc is indeed active against a broad range of clinical isolates, and second, we confirmed the observation that various isolates are affected differently by zinc," wrote Arens and Travis.

Zinc gluconate and zinc lactate inactivated all five of the herpes simplex-1 isolates by more than 97.5 percent. However, the herpes simplex-2 isolates were less sensitive to zinc. For example, zinc gluconate resulted in only a 30 percent inactivation and zinc lactate resulted in a 92 percent reduction in herpes simplex-2 activity in one of the isolates.

The researchers noted that zinc likely works by blocking a glycoprotein on the surface of herpes viruses needed to penetrate human cells.

"Given what we know about the mechanism of action of zinc on viruses, it is possible that it will inactivate many viruses with surface glycoproteins... the clinical relevance of this inactivation may depend to a great extent on whether the zinc ions can be delivered to the site of infection at a sufficient concentration to be effective against the virus," the authors wrote.

They added that, in the case of herpes simplex infections, large concentrations of zinc can often be applied topically.

In a separate study, researchers from the Centers for Disease Control and Prevention, Atlanta, found that inadequate zinc intake is widespread in the United States.

Ronette R. Briefel, DrPH, and colleagues analyzed dietary and supplement data from 29,000 people participating in the Third National Health and Nutrition Examination Survey, obtained between 1988 and 1994.

Only 55.6 percent of people (including those taking zinc supplements) obtained an adequate intake of zinc from food or supplements. "Adequate" was defined as consuming at least about three-fourths of the 1989 Recommended Dietary Allowance (15 mg/day) for the mineral.

Total zinc intakes were higher in men than in women, and in white adolescents and adults than in blacks and Hispanics. Children ages one to three, adolescent girls, and people over age 71 were at greatest risk of "inadequate" zinc intake.

References: Arens M, Travis S. Zinc salts inactivate clinical isolates of herpes simplex virus in vitro. *Journal of Clinical Microbiology*, 2000;38:1758-1762. Briefel RR, Bialosticky K, Kennedy-Stephenson J, et al. Zinc intake of the U.S. population: findings from the Third National Health and Nutrition Examination Survey, 1998-1994. *Journal of Nutrition*, 2000;130:1367S-1373S. □

Perspectives...

Are Herbs Really Dangerous – Or Just Unwanted Competition Against Drugs?

In recent months, we've witnessed a series of vitriolic attacks on the use of herbal supplements. While some concerns are justified – herbs, like foods, do interact with many medications – most attacks have distorted the facts.

In the June 8th *New England Journal of Medicine*, former FDA commissioner David A. Kessler, MD, called on Congress to protect consumers against the

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"hazards of dietary supplements." His editorial was published in conjunction with an article in which a dangerous Chinese herb was inadvertently substituted for a safe weight-loss herb – in Belgium!

Should U.S. dietary supplement policy be based on a formulation mistake that occurred overseas, in a product never sold in the United States? Hardly.

The underlying issue is not whether herbs or other dietary supplements (e.g., vitamins and minerals) have health hazards. The impressive research on herbal remedies, and their use by millions of medically unsupervised people over thousands of years, says plenty about their safety and efficacy.

The real issue is that herbs, like vitamins and minerals, pose a long-term threat to the pharmaceutical industry, which has revenues of \$100 billion in the United States and \$300 billion worldwide annually.

Just recently, researchers reported that St. John's wort worked as well as, if not better than, the antidepressant drugs Zoloft and Prozac (see below), and studies have found the herb to have fewer side effects. Similarly, ginkgo can slow the progression of Alzheimer's disease, and garlic is an effective blood thinner – and both are also far safer and less expensive than the prescription drug alternatives.

To maintain their dominance in the marketplace, drug companies spend about \$1 billion in consumer advertising during a typical year, twice the amount they spend on medical journal advertising.

Yet prescription and over-the-counter drugs are extraordinarily dangerous. In hospitals alone, prescription drugs kill more than 100,000 people and seriously injure more than 2 million others annually in the United States. No one knows how many people outside of hospitals are injured by drugs.

If government agencies want to make life safer, they would do better to place even greater restrictions on drugs, not on herbs and other dietary supplements. — Jack Challem

Studies Find that St. John's Wort is Just as Good as Popular Antidepressants

The herb St. John's wort works just as well as Zoloft (sertraline) and Prozac (fluoxetine) in treating depression, according to two double-blind studies.

Ronald Brenner, MD, of the St. John's Episcopal Hospital, Far Rockaway, N.Y., and his colleagues gave St. John's wort to eight men and women and Zoloft to 12 subjects. All of the patients were diagnosed with mild to moderate depression, based on their scores on the Hamilton Rating Scale for Depression and the Clinical Global Impression scale, both standard tests.

Patients received 600 mg daily of St. John's wort for one week, followed by 900 mg daily for six weeks; or 50 mg daily of Zoloft for one week, followed by 75

mg daily for the remainder of the trial.

Those taking St. John's wort had substantial improvements within two weeks. After six weeks, symptoms of depression were reduced by 47 percent among patients taking St. John's wort and 40 percent among those taking Zoloft, based on at least a 50 percent response in the Hamilton scale scores.

In the other study E. Schrader, MD, a physician in Pohlheim, Germany, gave either St. John's wort or Prozac to 240 patients with mild to moderate depression for six weeks. In both groups, scores on the Hamilton scale decreased by about 12 percent. However, more patients responded to St. John's wort, and they had greater reductions in the severity of depression. The herb also resulted in only one-third as many side effects as did Prozac.

"We concluded that hypericum [St. John's wort] and fluoxetine are equipotent with respect to all main parameters used to investigate antidepressants in this population," Schrader wrote. "Although hypericum may be superior in improving the responder rate, the main difference between the two treatments is safety."

Reference: Brenner R, Azbel V, Madhusoodanan S, et al. Comparison of an extract of hypericum (LI 160) and sertraline in the treatment of depression: a double-blind, randomized pilot study. *Clinical Therapeutics*, 2000;22:411-419. Schrader E. Equivalence of St. John's wort extract (Ze 117) and fluoxetine: a randomized controlled study in mild-moderate depression. *International Clinical Psychopharmacology*, 2000;15: 61-68. □

Consumption of Vitamin C-Rich Fruit Reduces Wheezing in Children

Eating more fruit may reduce wheezing and other respiratory symptoms in children, report Italian researchers.

Francesco Forastiere, PhD, of the Regional Health Authority, Rome, and his colleagues analyzed the diets and respiratory health of almost 19,000 Italian children ages six to seven years old. Their wintertime servings of fruits were categorized as less than once a week, one to two times, three to four, or five to seven times a week.

Children with the highest intake of fruit – chiefly citrus and kiwi – were 36 percent less likely to experience wheezing over a 12-month period, compared with children who ate the least fruit. In addition, children who consumed the greatest amount of fruit were 32 percent less likely to experience shortness of breath with wheezing, 41 percent less likely to have severe wheezing, and 27 percent less likely to have nighttime coughing.

In a follow-up study of 4,104 of the children, Forastiere found that fruit consumption protected

against wheezing, and that the effect was *not* dose related. Even intake of as little as one or two servings of fruit weekly significantly reduced the risk of wheezing and other respiratory problems.

“Our data show a clear association between a low intake of oranges and other vitamin C containing fruits during winter and an increased risk of wheezing symptoms in children,” wrote Forastiere.

Reference: Forastiere F, Pistelli R, Sestini P, et al. Consumption of fresh fruit rich in vitamin C and wheezing symptoms in children. *Thorax*, 2000;55: 283-288. □

Fish Oils and Arginine Extend Life Expectancy in Dogs with Lymphoma

Supplementation with fish oils and the amino acid arginine may increase survival time in people with non-Hodgkins lymphoma, according to a study with dogs.

Gregory K. Ogilvie, DVM, of Colorado State University, Ft. Collins, fed 32 dogs with lymphoma either a diet supplemented with fish oils and arginine or a diet supplemented with soybean oil as a “control.” The dogs received the diets before and after remission was achieved with the drug doxorubicin.

Lymphoma in dogs is similar to non-Hodgkins lymphoma in people.

Dogs receiving the supplements had significantly higher blood levels of docosahexaenoic acid (DHA) and eicosapentaenoic acid (EPA) compared with the control group. The increase in DHA, in particular, was significantly associated with a longer remission and a greater survival time.

The supplements had an additional benefit. Typically, dogs with lymphomas and other malignancies have elevated blood levels of lactic acid and insulin, indicating disturbed glucose metabolism. High DHA and EPA levels were associated with lower levels of lactic acid and a more moderate insulin response to intravenous glucose.

Reference: Ogilvie GK, Fettman MJ, Mallinckrodt CH, et al. Effect of fish oil, arginine, and doxorubicin chemotherapy on remission and survival time for dogs with lymphoma. *Cancer*, 2000;88:1916-1928. □

Beta-Sitosterol Supplements Ease Symptoms Related to Enlarged Prostate

Beta-sitosterol can reduce symptoms of benign prostatic hyperplasia (BHP), according to a study by German researchers.

Found in fruits and vegetables, beta-sitosterol is a hormone-like substance. Although beta-sitosterol does not have hormone properties in humans, it does have some cholesterol and fat-blocking properties.

Avocados are a particularly rich source of beta-sitosterol.

An initial study by R. R. Berges, M.D., and colleagues from the department of urology, Ruhr-University of Bochum, found that six months of supplementation with beta-sitosterol (20 mg/day) improved overall quality of life, increased urinary flow, and reduced residual urine volume (which can result in “dribbling”) in a group of 200 men.

In a follow-up study, Berges tracked 38 patients from this study who continued taking beta-sitosterol for an additional 18 months. He also followed up on 27 patients who had been previously been in the placebo group and later began taking beta-sitosterol, as well 41 patients who had taken beta-sitosterol for six months but did not continue taking supplements.

Berges noted that the “beneficial effects of beta-sitosterol treatment recorded in the 6-month double-blind trial were maintained for 18 months.” In addition, when the former placebo patients starting taking beta-sitosterol, they gained the same relief of symptoms as those who had taken the supplements in the earlier study.

However, patients who had originally taken beta-sitosterol, but stopped, showed a slight worsening of symptoms.

Reference: Berges RR, Kassen A, Senge T. Treatment of symptomatic benign prostatic hyperplasia with B-sitosterol: an 18-month follow-up. *British Journal of Urology International*, 2000;85:842-846. □

Low Vitamin B12 Linked to Depression – and Deficiency May Be Common

Elderly women deficient in vitamin B12 are twice as likely to suffer from severe depression, compared with women who have normal blood levels of the vitamin.

Jack M. Guralnik, MD, PhD, of the National Institute of Aging, Bethesda, Md., and his colleagues studied 700 disabled but nonsenile women over age 65. Almost 32 percent of the women were depressed, based on the Geriatric Depression Scale.

Guralnik found significant vitamin B12 deficiencies in 14.9 percent of nondepressed women, 17 percent of mildly depressed women, and 27 percent of severely depressed women.

Although women with depression did not have particularly low blood levels of vitamin B12, they did have significantly elevated levels of methylmalonic acid. High levels of methylmalonic acid indicate low “functional” vitamin B12 activity.

The more common method of diagnosing vitamin B12 deficiency is to examine the blood for signs of megaloblastic anemia. However, this ap-

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Quick Reviews of Recent Research

• Vitamin E lowers cervical cancer risk

Researchers exposed laboratory mice to a chemical known to induce cervical cancer. Vitamin E prevented the conversion of precancerous cervical dysplasia to cancer. In addition, vitamin E increased levels of glutathione, catalase, and superoxide dismutase – endogenous antioxidants that help the body break down toxins.

De S, et al., *Nutrition Research*, 2000;20:261-272.

• Ginseng protects against cancer

In a short review article, researchers described the immune-enhancing and anticarcinogenic properties of ginseng supplements, long used to enhance vigor. A human study found that people taking ginseng had a 60 percent lower risk of developing cancer, compared with nonusers. Laboratory mice

Vitamin B12 and Depression...

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proach is “akin to requiring jaundice to diagnose liver disease,” observed Ralph Carmel, MD, an expert on vitamin B12 at the Weill Medical College of Cornell University, New York.

In a recent article, Carmel noted that preclinical vitamin B12 deficiency likely affects the nervous system. He explained that about half of patients with mild B12 deficiency also have electrical abnormalities in nerves. These changes “rarely occur without metabolic evidence of deficiency, and the changes usually reverse after cobalamin [B12] therapy.”

Carmel reported that, depending on how one defines deficiency, 10-25 percent of the elderly have some abnormality associated with B12 deficiency. Forty percent of B12 deficiency is caused by digestive malabsorption of the vitamin, even though dietary levels are adequate.

Drugs, such as omeprazole (Prilosec), which reduce gastric acid secretion, lower B12 absorption. In addition, the use of nitrous oxide anesthesia can reduce B12 levels.

“In view of the high prevalence of mild, pre-clinical deficiency, routine cobalamin [B12] supplementation in the general population, or in segments of it such as the elderly or pregnant vegetarians, may be advisable,” Carmel wrote.

References: Penninx BWJH, Guralnik JM, Ferrucci L, et al. Vitamin B12 deficiency and depression in physically disabled older women: epidemiologic evidence from the women’s health and aging study. *American Journal of Psychiatry*, 2000;157:715-721. Carmel R. Current concepts in cobalamin deficiency. *Annual Review of Medicine*, 2000;51:357-375. □

exposed to a cancer-causing chemical had a significantly lower incidence of lung adenomas when they received ginseng extract in their drinking water.

Sato T and Miyata G. *Nutrition*, 2000;16:391-392.

• Holy basil has antiinflammatory properties

The herb holy basil (*Ocimum sanctum*) contains a number of antioxidant phenolic compounds. One of them, eugenol, has potent antiinflammatory and cyclooxygenase-inhibiting (Cox-1 and Cox-2) properties in laboratory experiments. The researchers noted that all six of the phenols tested had activity comparable to ibuprofen, naproxen, and aspirin.

Kelm MA, et al. *Phytomedicine*, 2000;7:7-13.

• Folic acid may protect against some breast cancers

In a study of 56,837 Canadian women, researchers found no link between folic acid and the risk of breast cancer. However, higher intake of folic acid did reduce the risk of breast cancer among women who consumed more than 14 grams (about one-half ounce) of alcohol daily. This protective effect was particularly evident among postmenopausal women.

Rohan TE, et al. *Journal of the National Cancer Institute*, 2000;92:266-268.

• Vitamin E helpful in diabetes

Diabetics often experience oxidative stress – that is, elevated levels of free radicals relative to antioxidants. When treated with diet and pharmaceuticals, 30 diabetic patients developed improved glycemic control and reduced oxidative stress. Supplements of 400 IU of vitamin E for four weeks further reduced free radicals and oxidative stress.

Sharma A, et al. *Metabolism*, 2000;49:160-162.

• Stomach bacterium reduces vitamin levels

Researchers found that *Helicobacter pylori*, a bacterium that causes many cases of stomach ulcers, reduces gastric levels of vitamin E and beta-carotene and increases the risk of gastric atrophy.

Zhang ZW, et al. *European Journal of Gastroenterology*, 2000;12:497-503.

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