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## IN THE NEWS

### Lycopene lowers PSA in prostate cancer patients

Yet more evidence has surfaced that lycopene, a constituent of tomato sauce, fights prostate cancer, and more generally preserves the integrity of the cell. This is the first report to show that lycopene reduces prostate specific antigen (PSA), a measure of prostate cancer activity.

In this study, which was presented at the annual meeting of the American Chemical Society (August, 2001), 32 mostly African American patients who had been diagnosed with prostate cancer and were awaiting radical prostatectomy were put on diets that included enough tomato sauce to provide 30 mg/day of lycopene for three weeks. Prostate cancer is more frequent and serious among African Americans than among Caucasians.

Mean serum PSA concentrations fell by 17.5%, while a measure of oxidative status fell by 21.3%. DNA damage in the cancer cells fell by 40% after three weeks, of which author Phyllis E. Bowen says, "We don't know whether that's good or bad." Most important, high concentration of lycopene in prostate tissues resulted in a nearly three-fold increase in programmed cell damage among cancer cells, which is a good thing.

"This is nice, because it establishes something you can do with these patients," says Glen Bublely, an oncologist at the Harvard Medical School and Beth Israel Deaconess Hospital, who was not involved in the study. "[Lycopene] may be a real suppressor of prostate cancer growth."

Two previous prospective studies had showed that men who eat lots of tomato sauce have a lower risk of prostate cancer than men who do not, and that they have an even lower risk of serious, more life-threatening forms of the cancer, says Bowen, who is a professor of nutrition at the University of Illinois, Chicago.

An epidemiologic study first suggested that lycopene lowers prostate cancer risk in the mid-1990s.



—David Holzman

## Combination of vitamin E and aspirin may prevent heart disease

A recent study done at the University of Pennsylvania Department of Pharmacology and published in *Circulation*, a journal of the American Heart Association, discovered that a combination of high dose of vitamin E with a low dose of a platelet-inhibiting drug leads to a dramatic reduction of atherosclerosis in mice genetically engineered for high cholesterol and susceptibility to atherosclerosis when fed a high-fat diet. Mice receiving the combination vitamin E plus platelet inhibitor treatment showed more than 80% reduction in atherosclerotic plaque compared to controls.

Vitamin E alone, in a dose equivalent to 800 mg/day for humans, resulted in a 65% reduction in atherosclerotic plaque. In a group receiving vitamin E and indomethacin, an anti-inflammatory drug that, like aspirin, also has anti-platelet activity, the reduction in plaque was especially impressive, reaching 80% to 85%. Indomethacin was administered in a dose equivalent to 25 mg in humans. The researchers concluded that a low dose of aspirin combined with a large dose of vitamin E would have a similar synergistic effect in humans.

The peroxidation of serum lipids and platelet activation, one of the factors in clot formation, have long been thought to interact in a way that leads to the development of atherosclerosis. The University of Pennsylvania scientists measured the urinary levels of an isoprostane that serves as a marker of lipid peroxidation, and those of thromboxane B(2), a marker of platelet activation. Vitamin E alone suppressed the levels of the lipid peroxidation marker, but not those of thromboxane B(2). When platelet-inhibitor indomethacin was used simultaneously with vitamin E, both markers were lowered, as well as soluble intercellular adhesion molecule-1 and monocyte chemoattractant protein-1. Monocytes are large white cells that engulf oxidized lipids and other debris; their adhesion to arterial lining is an important step in the progression of atherosclerosis.

The spectacular reduction in atherosclerotic plaque resulting from combination vitamin E and indomethacin was achieved without any change in cholesterol levels. The findings suggest that lowering free radicals, inflammation and platelet clumping may be of equal or greater importance in preventing heart disease than lowering cholesterol. The authors urge further investigation of treatments combining antioxidants and platelet inhibitors.

—Ivy Greenwell

Cyrus T et al. Lipid peroxidation and platelet activation in murine atherosclerosis. *Circulation* 2001; 104:1940-45.

Vitamin E and aspirin delay heart in mice even with high cholesterol levels. *EurekaAlert*, October 18, 2001.

## Speed up post-surgery recovery

Patients taking immune-boosting nutritional supplements had fewer potentially life-threatening infections following cardiac surgery than those who did not, according to a paper published in the September 1, 2001 issue of *Lancet*. The supplement “. . .improved preoperative host defense, reduced the number of postoperative infections and better preserved renal function,” the clinicians wrote. There were only four cases of infections and three of pneumonia in the supplement group, versus 12 and 9, respectively, in the control group. Median length of stay in hospital was 7.5 days for the treatment group, 9.5 for the control group.

“Additionally, delayed-type hypersensitivity response to recall antigens improved preoperatively and remained better until hospital discharge,” according to the report. The supplement contained L-arginine, a precursor of nitric oxide, which helps blood vessels dilate, omega-3 acids, which may minimize inflammation from surgery, and yeast RNA, which boosts immune response. “It surprised me very much that oral [supplements] can influence expression of certain molecules which are important for immune function,” says coauthor Sander J.H. van Deventer, professor of gastroenterology at the Academic Medical Center, Amsterdam. “What you eat can influence what your monocytes do in your blood, very rapidly and very profoundly,” and that, in turn, can influence outcomes.

In the *Lancet* study, 50 patients were randomized to receive either the supplement or a placebo, for at least five days prior to surgery. The patients were considered to be at high risk from postoperative infection due to low ejection fraction, advanced age and other factors. A new study not yet published, in which patients received a different supplement, also showed “rapid and profound changes.”

—David Holzman

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