

Researchers investigate links between prostate, cadmium, zinc

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Cadmium exposure is a known risk factor for prostate cancer, and a new University of Rochester study suggests that zinc may offer protection against cadmium.

In an article published in the February 2008 journal, *The Prostate*, epidemiologist Edwin van Wijngaarden, Ph.D., reports that PSA levels were 22 percent higher among American men who had zinc levels below the median (less than 12.67 mg/daily) and cadmium levels above the median. (PSA is a protein produced by the cells of the prostate gland. The higher a man's PSA level, the more likely cancer is present.)

In contrast, among men with a greater than median zinc intake, little evidence of an association between cadmium and PSA was found.

The way zinc and cadmium interact within human organs is significant and provides interesting leads for study, van Wijngaarden said. Zinc stimulates production of a protein that binds cadmium thereby taking it out of circulation and reducing its toxic effects.

However, it is too early to recommend zinc supplements for those who're worried about prostate damage, he added.

“Your health is based on the complex interplay of many factors,” said Van Wijngaarden, an assistant professor in the Department of Community and Preventive Medicine at the University of Rochester Medical Center. “Environmental exposures play out differently in

people. It's important to identify those subpopulations that may be more sensitive to toxicities.”

The study was based on data from a sample of 1,320 men registered in the National Health and Nutrition Examination Survey (NHANES) 2001-2002, which was the first time PSA levels were available. In men over age 40, urinary cadmium levels were measured in about one-third of the sample and dietary zinc intake was reported based on 24-hour recall. Information on all three variables was available for a total of 422 men.

Cadmium exposure occurs mostly through smoking and diet, the latter as a result of fertilizer-soaked soil used for growing crops. Cadmium is also a byproduct of the industrial process used for making fungicides, batteries, pigments and coatings that protect metals from corrosion. Workers in those areas are at risk for much higher exposures. When ingested or inhaled, cadmium collects in the liver, kidneys and prostate.

Prostate cancer is the most frequently diagnosed non-skin malignancy in the United States. Nearly 219,000 new cases and 27,000 deaths were expected in 2007.

Zinc is an important nutrient to maintain health. However, the jury is still out on the benefits of large quantities zinc and van Wijngaarden cautioned that some studies show it may do more harm than good when taken as a dietary supplement. Zinc toxicity can harm the immune system, reduce beneficial cholesterol, and alter iron function.

“This type of inconsistency may be explained by variability in certain populations,” he said. “Epidemiologists often focus on single exposures, but biology is not that simple. The latest research suggests we should be studying the interplay of exposures on certain subgroups of people and how they vary.”

Source: University of Rochester

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