Adequate Zinc Intake Protects DNA

In a recent issue of the *American Journal of Clinical Nutrition*, researchers from the Linus Pauling Institute report that reducing dietary zinc is associated with increased breakage of peripheral blood cell DNA strands, while restoring zinc to normal levels reduces breakage. The ability of zinc to increase DNA repair, in addition to its role as an antioxidant, may be responsible for its protective effect.*

For the current study, 9 men received zinc-depleted diets for 42 days. DNA strand breaks increased by an average of 57% by the end of the period, indicating that six weeks of reduced zinc intake significantly increases DNA damage in peripheral blood cells. These increases proved to be reversible by restoring adequate zinc intake.

“Overall, these data suggest that dietary zinc status affects DNA damage in peripheral blood cells and that adequate zinc status may be essential to maintain DNA integrity in humans,” the authors write.

—Dayna Dye

Chlorophyllin-Chemo Cocktail Proposed

A report published in the *International Journal of Cancer* describes research conducted at Oregon State University that reveals a potential role in cancer therapy for chlorophyllin, a water-soluble derivative of chlorophyll.*

Linus Pauling Institute’s Cancer Chemoprotection Program director Rod Dashwood and his associates tested the effect of chlorophyllin on cultured human colon cancer cells. They observed that the cells spent more time in their synthesis phase, resulting in a disruption in growth that led to cell death.

The researchers discovered that chlorophyllin reduces an enzyme needed for DNA synthesis known as ribonucleotide reductase. The enzyme is also targeted by the chemotherapy drug hydroxyurea. Comparison of chlorophyllin and hydroxyurea’s effects revealed a ten times greater benefit for chlorophyllin against colon cancer cells. The finding suggests a role for chlorophyllin in combination with conventional cancer treatment, which could enable the administration of a lower dose of potentially toxic chemotherapeutic drugs.

—Dayna Dye


Vitamin C Levels Up, But Smokers Still at Risk of Deficiency

An article published online in the *American Journal of Clinical Nutrition* revealed that vitamin C status has improved in the United States over the past decade, yet a significant incidence of deficiency still exists among smokers and individuals of low socioeconomic status.*

For their report, researchers at the Centers for Disease Control and Prevention in Atlanta compared data from the National Health and Nutrition Examination Survey (NHANES) III, conducted from 1988 to 1994, to data from NHANES 2003-2004. Overall, the presence of vitamin C deficiency among NHANES 2003-2004 participants was 12.4%, down from 12.4% among NHANES III participants. Smokers had levels that were one-third lower than nonsmokers, and had over three times as great a risk of deficiency. Vitamin C concentrations rose and deficiency declined with increased socioeconomic status.

“The vitamin C status of the US population appears to have substantially improved from 1988-1994 to 2003-2004,” the authors conclude.

—Dayna Dye

* *Am J Clin Nutr. 2009 Aug 12.*