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Vitamin C works against cancer (but maybe not the way you thought)

Researchers from Johns Hopkins report in the September, 2007 issue of the journal *Cancer Cell* that vitamin C can indeed help prevent cancer as has been claimed for years by a number of scientists including Linus Pauling, but it appears to do so in a different manner than that which earlier researchers proposed. While it had been believed that the well known antioxidant property of vitamin C prevented cancer by protecting DNA from free radical damage, the latest research unveils a new mechanism: that of preventing the ability of a tumor to grow in a reduced oxygen environment.

Johns Hopkins professor of medicine and oncology Chi Dang, MD, PhD and his associates tested the ability of vitamin C as well as N-acetyl-cysteine, another antioxidant, in mice implanted with human lymphoma or liver cancer cells, both of which produce a high number of free radicals. Control groups of mice implanted with the cancers received no antioxidant supplementation.

When the researchers examined DNA from the mice that did not receive antioxidant treatment, a lack of significant damage was observed. "Clearly, if DNA damage was not in play as a cause of the cancer, then whatever the antioxidants were doing to help was also not related to DNA damage," lead author Ping Gao, PhD, said of the finding.

The team found that a protein known as hypoxia-induced factor (HIF-1), which is dependent upon free radicals, was diminished in antioxidant-treated animals. The protein enables tumors to survive in the low oxygen environment of rapidly growing tumors. "When a cell lacks oxygen, HIF-1 helps it compensate," Dr Dang explained. "HIF-1 helps an oxygen-starved cell convert sugar to energy without using oxygen and also initiates the construction of new blood vessels to bring in a fresh oxygen supply."

The finding was verified by the engineering of cancer cells to contain a variant of HIF-1 that was not dependent upon free radicals. Antioxidants proved to be powerless against these cancerous cells.

"The potential anticancer benefits of antioxidants have been the driving force for many clinical and preclinical studies," Dr Dang noted. "By uncovering the mechanism behind antioxidants, we are now better suited to maximize their therapeutic use."

"Once again, this work demonstrates the irreplaceable value of letting researchers follow their scientific noses wherever it leads them," he added.

Health Concern

Complementary alternative cancer therapies

Vitamin A derivatives, known as retinoids, protect against the development of various cancers, including those of the skin, breast, and lung (Clarke N et al 2004; Khera P et al 2005). Dietary supplementation with synthetic vitamin A for 12 months in liver cancer survivors prevented recurrence of this cancer (Takai K et al 2005). In addition to preventing cancer, vitamin A derivatives have been used to cure acute promyelocytic leukemia (Clarke N et al 2004).

Vitamin C. Long-term human studies have shown that vitamin C dietary supplements, when used in conjunction with other antioxidants, can reduce the risk of developing cancer (Hercberg S et al 2004). Similar results were found for cancers of the prostate (Meyer F et al 2005) and lung (Mooney LA et al 2005; Wright ME et al 2004).

Clinical studies have shown that vitamin E can reduce the risk of prostate and lung cancers, particularly when used in combination with selenium supplements (Helzlsouer KJ et al 2000; Woodson K et al 1999). Regular and long-term (over 10 years) use of vitamin E reduces the risk of death from bladder cancer (Jacobs EJ et al 2002). Similarly, the use of vitamin E supplements for longer than three years slightly reduces the risk of recurrence among breast cancer survivors (Fleischauer AT et al 2003).

http://www.lef.org/protocols/cancer/alternative_cancer_therapies_01.htm

Featured Products

Buffered Vitamin C Powder

Vitamin C, or ascorbic acid, is a white, crystalline, water-soluble substance found in citrus fruits and green vegetables. As an antioxidant, vitamin C scavenges free radicals in the body and protects tissues from oxidative stress. Vitamin C also promotes the absorption of iron, while preventing its oxidation. Vitamin C is a vital cofactor to the formation of collagen, the connective tissue that supports arterial walls, skin, bones, and teeth.

<http://www.lef.org/newshop/items/item00084.html>



Durk Pearson & Sandy Shaw's™ Dual-C Capsules

Fat-soluble vitamin C (ascorbyl palmitate) may be as important as water-soluble vitamin C, yet most vitamin consumers have not even heard of ascorbyl palmitate. If you take Life Extension Mix™, you are receiving an ample dose of fat-soluble ascorbyl palmitate. Each capsule of Dual-C contains 677 mg of fully reacted calcium ascorbate (gentle on the stomach and supplies calcium) and ascorbyl palmitate (to protect fat tissues from oxidation).

<http://www.lef.org/newshop/items/item00240.html>



Final Clearance Sale Ends September 17, 2007

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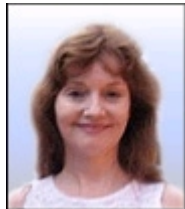
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If you have questions or comments concerning this issue or past issues of *Life Extension Update*, send them to ddye@lifeextension.com or call 954 202 7716.

For longer life,



Dayna Dye
Editor, Life Extension Update
ddye@lifeextension.com
954 766 8433 extension 7716
www.lef.org

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