

Antioxidant Lycopene - a Promising Link to Prostate Cancer Prevention

James P. Meschino, DC, MS

The March 6, 2002 *Journal of the National Cancer Institute* featured an update from the Health Professionals Follow-Up Study (HPFS), showing that frequent tomato or lycopene intake was associated with a reduced risk for prostate cancer. The initial findings from the HPFS, which followed 47,363 male health practitioners (non-MD) from 1986 to 1992, showed a correlation between lycopene intake and a reduced risk for prostate cancer. The follow-up study of the same cohort demonstrated that this correlation persisted for an additional six years (through January 31, 1998).

The most recent data suggests that men who consume two or more servings per week of tomato sauce (the primary source of bioavailable lycopene) versus less than one serving per month, show a 23-percent reduction in risk of developing prostate cancer. Simply ingesting more lycopene from tomatoes, tomato products or lycopene itself was shown to reduce risk for prostate cancer by 16 percent, after controlling for other confounding variables, such as total fruit and vegetable consumption and for olive oil use (a marker for the Mediterranean diet). These values agree with those of the *Physicians' Health Study* (which measured blood levels of lycopene and other nutrients) and the original data compiled by E. Giovannucci in the first observations of the HPFS.

Lycopene is a powerful fat-soluble antioxidant (hence its high bioavailability from tomato sauce, which usually contains olive oil). It is known to concentrate in the prostate gland in men, where it has been shown to participate in free radical scavenging and cellular differentiation. Both of these activities are involved in the prevention of the multistep process of cancer development, and are likely to be the ways in which lycopene may act as a chemopreventive agent in the prostate gland. The initial data showed that men consuming 6.5 mg or more per day of lycopene (from any source) were deriving benefits in the prevention of prostate cancer. Consuming the equivalent of one to one-and-a-half whole tomatoes per day, on average (consumed with some fat to facilitate lycopene absorption), or the intake of lycopene from supplements, continues to be a prudent strategy for men to consider as part of a prostate cancer prevention campaign.

Reference

Giovannucci E, et al. A prospective study of tomato products, lycopene, and prostate cancer risk. *J Natl Cancer Instit* 2002;94(5):391-398.

Green Tea May Help Ward off Osteoarthritis, Rheumatoid Arthritis

Green tea is a rich source of a special class of antioxidants known as catechins. These polyphenolic compounds have been shown to reduce inflammation in a murine model of inflammatory arthritis. In the *Journal of Nutrition*, Adcocks, et al., investigated the effects of green tea catechins on cartilage extracellular matrix components using an *in vitro* model. Bovine nasal and metacarpophalangeal cartilage, and human nondiseased, osteoarthritic and rheumatoid cartilage

were cultured, with and without reagents known to accelerate cartilage matrix breakdown. Individual catechins derived from green tea were added to the cultures, and the amount of released proteoglycan and type-II collagen were measured by metachromatic assay and inhibition ELISA, respectively. The results showed that certain catechins, particularly *gallate ester*, were effective at micromolar concentrations at inhibiting proteoglycan and type-II collagen breakdown. No toxic effects of the catechins were evident.

The researchers concluded that some green tea catechins are chondroprotective, and that consumption of green tea or green tea extract may be prophylactic for arthritis, reducing inflammation and slowing cartilage breakdown. This data agrees with other published reports showing that supplementation with 400 IU of vitamin E or 100-200 mcg of selenium can help to improve arthritic symptoms in human trials. Like green tea catechins, vitamin E and selenium, at these supraphysiological levels, provide enhanced antioxidant protection and appear to promote the production of anti-inflammatory prostaglandins, by modulating the activities of the cyclooxygenase enzyme system.

Further studies using green tea catechins are required before definitive statements can be made about their use as preventive or therapeutic aids for arthritis. However, higher levels of green tea intake are associated with a lower risk of stomach and esophageal cancer, and possibly act to help reduce risk at other tissue sites as well. Thus, it appears that green tea intake may be a healthier alternative than coffee and other hot beverages for a variety of reasons, which may now include helping to prevent or reduce the breakdown of joint cartilage and controlling inflammation.

Reference

Adcocks C, Collin P, Buttle DJ. Catechins from green tea inhibit bovine and human cartilage proteoglycan and type-II collagen degradation *in vitro*. *J Nutr* 2002;132:341-346.

Please take time to listen to Dr. Meschino's interviews on ChiroWeb.com. The subjects of the first three are: *Combining Traditional, Complementary and Natural Interventions*; *The Benefits of Melatonin*; and *Using Natural Remedies to Manage Women's Health Issues*. Each interview is packed with important information available to you and your patients. You can listen to the interviews at www.chiroweb.com/audio/meschino. There is a link on the directory page for your feedback.

James Meschino,DC,MS
Toronto, Ontario
Canada
www.renaissance.com

MAY 2002