

The Nutrition Reporter™

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Is Lycopene the Supplement of Choice to Lower PSA and Prevent Prostate Cancer?

One out of every three men diagnosed with prostate cancer uses some type of alternative therapy, typically in conjunction with conventional surgery or radiation, according to a recent study. In separate research, doctors found that lycopene, the red antioxidant found in tomatoes, can reduce the chance of precancerous prostate tissue turning into full-blown cancer.

June M. Chan, ScD, of the University of California, San Francisco, studied 2,582 men with prostate cancer. One-third of the men used some form of alternative therapy, and just over one-fourth took some type of supplement. Of those taking supplements, 26 percent took vitamins or minerals, 16 percent used herbs, 13 percent took antioxidants, and 12 percent used a supplement labeled for prostate health.

Lycopene users were relatively few (part of the 12 percent group), but they may have opted for the best supplement for prostate health.

Nayan Kumar Mohanty, MS, MCh, and his colleagues at the V.M. Medical College, New Delhi, India, treated 40 men diagnosed with high-grade prostate intraepithelial neoplasia (HGPIN), a precancerous condition. Half of the men were asked to take 4 mg of natural lycopene twice daily for one year, and the other men were not given any supplements.

By the end of the study, men taking lycopene supplements had an average 42 percent decrease in their prostate-specific antigen (PSA) level, a marker of prostate cancer risk. In contrast, PSA levels rose by an average 23 percent among men not given lycopene supplements.

In addition, Mohanty and his colleagues reported that two (10 percent) of the men taking lycopene developed cancer during the study. In contrast, six (30 percent) of the men in the untreated group developed cancer during the course of the study.

They wrote, "Lycopene can act as a chemopreventive agent in preventing or delaying the

development of malignancy in these high-risk patients."

In 1995, researchers first reported that diets high in lycopene were associated with a significant reduction in prostate cancer risk. A small study published in 2002 found that large doses of lycopene could reduce the size of prostate cancers. Lycopene is found in tomato, watermelon, pink grapefruit, and guava.

References: Chan JM, Elkin EP, Silva SJ, et al. Total and specific complementary and alternative medicine use in a large cohort of men with prostate cancer. *Urology*, 2005;66:1223-1228. Mohanty NK, Saxena S, Pratap U, et al. Lycopene as a chemopreventive agent in the treatment of high-grade prostate intraepithelial neoplasia. *Urologic Oncology: Seminars and Original Investigations*, 2005;23:383-385. □

Perspectives...

Why Nutrition Should Come First

We all have our biases, and mine tilt me toward the use of nutritional therapies above all others. I don't discount the others – I just don't see herbs, homeopathy, acupuncture, drugs, or other therapies having the same fundamental importance.

Why do I feel so strongly about nutrition? It's simple, really. Nutrients provide the building blocks of our biochemistry. Even our genes require nutrients for synthesis, repair, and regulation. All of the proteins, enzymes, tissues, and other substances that make up our body originate with nutrients.

I believe that most of what goes wrong in our bodies is related to inadequate or unbalanced nutrients interacting with our genes and stresses.

How can you determine your nutritional status? The most accurate way is through blood testing. When it comes to dealing with chronic diseases, it only makes sense to identify nutritional deficiencies and imbalances before proceeding with any kind of therapy. Changes in diet and supplements usually can lead to quick improvements. Unfortunately, as

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you well know, this is not how modern medicine and health care function.

While herbs are far better and safer than drugs, I think it is prudent to first identify and correct dietary problems, especially in chronic diseases. While herbs are rich in antioxidants, they also contain substances that seem to work through pharmacological means. In other words, their constituents may not always be a normal part of our biochemistry.

I feel the same way about homeopathy. The theory behind homeopathy – that smaller and often undetectable amounts of substances have stronger therapeutic effects – often dumbfounds people. However, molecular biology has taught us that extremely small amounts of substances can have profound effects. Just consider that all the growth hormone in your body would fill no more than 1/40,000th of a teaspoon. Again, I believe that nutrition should come first. While homeopathy might sometimes cure, it does not nourish the body.

After nutrition, I believe that stress reduction and physical activity are paramount. Stress triggers changes that increase our nutritional and biochemical requirements to restore homeostasis. Physical activity increases biochemical activities, so nutrients are put to better use. Again, there's no way to escape the fundamental importance of nutrition. –JC

Hefty Doses of Fish Oils Can Benefit People with Exercise-Triggered Asthma

Large doses of omega-3 fish oils can improve lung function and reduce inflammation in people with exercise-induced asthma. The disease is characterized by a narrowing of airway passages, leading to reduce lung function.

In the study, Timothy D. Mickleborough, PhD, of Indiana University, Bloomington, and his colleagues gave 16 patients either fish oil capsules or placebos daily for three weeks. The supplements and placebos were then reversed for a second three-week period, so all of the subjects took fish oils and placebos during part of the study.

The fish oil capsules – 20 per day – provided 3.2 grams of eicosapentaenoic acid (EPA) and 2 grams of docosahexaenoic acid (DHA) daily.

Both groups of subjects continued to experience exercise-induced asthma attacks, but fish oil capsules reduced their intensity.

Normally, exercise-induced bronchoconstriction is diagnosed when there is more than a 10 percent decline in lung function. Subjects taking fish oil supplements did not experience that level of impaired breathing.

Another sign of improvement was that fish oil supplements led to about a one-third reduction in the

need for bronchodilators (inhalers) after exercising.

Tests also found that fish oil supplements led to lower levels of several chemicals that promote inflammation.

Reference: Mickleborough TD, Lindley MR, Ionescu AA, et al. Protective effect of fish oil supplementation on exercise-induced bronchoconstriction in asthma. *Chest*, 2006;129:39-49. □

Eating Eggs Instead of Bagels for Breakfast Leaves You Less Hungry

Eating a couple of eggs for breakfast leaves people feeling more satisfied and less hungry over the following day and a half, compared with eating a bagel.

Nikhil V. Dhurandhar, PhD, with the Pennington Biochemical Research Center, Baton Rouge, Louisiana, and colleagues gave 30 overweight women, ages 25 to 60 years, two different breakfasts. On one day, they ate two scrambled eggs along with two slices of toast and reduced-calorie fruit spread. Two weeks later, they ate a bagel, two tablespoons of cream cheese, and 3 ounces of non-fat yogurt. Both meals provided almost the same number of calories.

The egg breakfast led to greater feelings of satiety – fullness – for three hours. The egg breakfast was so satisfying that, by lunchtime, women ate an average 22 percent fewer calories.

That trend continued over the next day and a half with fewer food cravings. By the end of the 36-hour study period, women who ate the egg breakfast consumed around 400 fewer calories.

The egg breakfast provided substantially more protein and fat, whereas the bagel breakfast included significantly more carbohydrate. Other evidence has suggested that high carbohydrate consumption increases hunger and food consumption.

Dhurandhar wrote, “Discretionary use of eggs has been traditionally advised due to their cholesterol content and the earlier implications in coronary heart disease risk. However, recent data from the Nurses Health Study showed that egg consumption did not contribute to the risk of coronary heart disease or stroke.”

Reference: Vander Wal JS, Marth JM, Khosla P, et al. Short-term effect of eggs on satiety in overweight and obese subjects. *Journal of the American College of Nutrition*, 2005;24:510-515. □

A Little More Protein May Help You Maintain Your Muscles as You Age

Adding more leucine-rich protein to the diet may slow the age-related decline in muscle mass, according to a recent study using laboratory rats.

In the first part of an experiment, Didier Attaix,

PhD, of the Institut National de la Recherche Agronomique, Ceyrat, France, and his colleagues confirmed that eating triggered the activity of enzymes known to break down muscles.

In the second part of the experiment, Attaix found that a leucine-supplemented diet blocked the activity of these enzymes, preventing the breakdown of muscle tissue after eating.

The supplemental leucine accounted for 5 percent of the animals' food.

In a related commentary, Michael J. Rennie of the University of Nottingham Medical School, Derby, England, framed the study in terms relevant to people. He noted that the loss of muscle mass, which can contribute to infirmity, begins by the time most people turn 40.

"What does this [Attaix' study] tell us about preserving our shrinking muscles? As the lean body mass declines, older people need less dietary energy – and cutting down on dietary fat and high glycemic-index carbohydrates is obviously a good idea for health reasons...although we probably do not need to eat more protein, it makes sense that what we do eat is of high quality, and that probably means animal protein, which contains lots of leucine."

Reference: Combaret L, Dardevet D, Rieu I, et al. A leucine-supplemented diet restores the defective postprandial inhibition of proteasome-dependent proteolysis in aged rat skeletal muscle. *Journal of Physiology*, 2005;569:489-499. Rennie MJ. A role for leucine in rejuvenating the anabolic effects of food in old rats. *Journal of Physiology*, 2005;569:357. □

Ginger Supplements Reduce Nausea and Vomiting Following Surgery

The herb ginger has been used for centuries in China for the treatment of gastrointestinal symptoms, including nausea and vomiting. Some evidence suggests that it works by modifying neurotransmitter behavior in the central nervous system and the gastrointestinal tract.

In a recent study, Nathorn Chaiyakunapruk, PharmD, PhD, and his colleagues analyzed data from five clinical trials in which ginger supplements were used to treat post-surgical nausea and vomiting.

Such cases of nausea may affect almost half of patients after surgery, though the prevalence is related to the type of surgery, anesthesia, and other factors. Rather than being a transitory problem, nausea and vomiting can lead to medical complications, including wound tearing and dehydration.

When Chaiyakunapruk pooled the data from the five studies – which included 363 patients – he found that a fixed dose of 1 gram or more of ginger led to about a one-third reduction in nausea and

vomiting during the first day after surgery.

"Because of its widespread availability, low cost, and great tolerability profile, ginger may be an attractive option..." wrote Chaiyakunapruk.

Reference: Chaiyakunapruk N, Kitikannakorn N, Nathisuwan S, et al. The efficacy of ginger for the prevention of postoperative nausea and vomiting: a meta-analysis. *American Journal of Obstetrics and Gynecology*, 2006;194:95-99. □

Vitamin B2 May Help Some People with Elevated Homocysteine

Elevated blood levels of homocysteine, which are toxic to blood vessel walls, can significantly increase the risk of heart disease and stroke. Several B vitamins, particularly folic acid and vitamins B6 and B12, are often recommended for reducing homocysteine levels. But new research indicates that some people may benefit from supplemental vitamin B2, also known as riboflavin.

High levels of homocysteine are usually related to low activity of the enzyme methylenetetrahydrofolate reductase (MTHFR), which is needed to convert homocysteine to methionine (a building block of protein). Low intake of folic acid can impair MTHFR activity, as can two common variations of the gene that programs the structure of MTHFR.

The MTHFR 677CT and MTHFR 677 TT genetic variations affect roughly half of the population, though the percentage varies among different ethnic and cultural groups around the world. These genetic variations lead to a sluggish MTHFR enzyme and, as a result, increased homocysteine levels. MTHFR enzyme activity can be further weakened by low intake of folic acid, but extra amounts of the vitamin can usually normalize the enzyme's activity.

It turns out that the MTHFR enzyme also depends on vitamin B2, which is frequently overlooked in correcting homocysteine levels. According to a recent study by Helene McNulty, PhD, of the University of Ulster, Northern Ireland, people with the MTHFR 677TT genetic variation may be more likely to benefit from vitamin B2.

McNulty recently gave 89 subjects, some with normal MTHFR genes and others with the 677CT and 6677TT variations, either supplemental vitamin B2 or placebos for 12 weeks. The dose of vitamin B2 was modest, only 1.6 mg daily.

Only people with the 677TT variation of the MTHFR gene benefited from the extra vitamin B2. Overall, their homocysteine levels decreased by 22 percent. Among people who had low vitamin B2 levels at the beginning of the study, the supplements led to a 40 percent decline in homocysteine levels.

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Quick Reviews of Recent Research

• Antioxidants help after stroke

Researchers selected 48 patients who had suffered an ischemic stroke and treated them with conventional medications or conventional medications plus vitamins C and E. The vitamins – 800 IU of vitamin E and 500 mg of vitamin C – were taken orally within 12 hours of the stroke and then each day for two weeks. Patients taking the antioxidant vitamins had lower markers of free radicals and inflammation.

Ullegaddi R, et al. *European Journal of Clinical Nutrition*, 2005;59:1367-1373.

• Low vitamin D common in hip fracture

In a study consistent with other recent reports, researchers found that just over half of 223 patients hospitalized for hip fractures were deficient in vitamin D. Almost one in every 10 patients had severe vitamin D deficiency. The study was conducted in Finland and the researchers noted that, because of the country's extreme northern location, vitamin D supplements were warranted in the elderly. The body makes vitamin D when skin is exposed to sunlight, but people living far from the equator may risk deficiency during winter months.

Nurmi I, et al. *Osteoporosis International*, 2005;16:2018-2024.

• Fish consumption helps keep mind sharp

In a study of 3,718 people 65 years of age and older, researchers found that eating fish slowed the expected age-related decline in cognitive function. People who ate fish once a week had a 10 percent slower rate of decline, and those who ate two or more fish meals each week had a 13 percent slower rate of decline. The effect seemed related more to fish consumption than omega-3 fish oils.

Morris MC, et al. *Archives of Neurology*, 2005;62:1849-1853.

• N-acetylcysteine (NAC) may help in prediabetes

Researchers fed laboratory rats a high-fructose diet with or without supplemental NAC. The high-fructose diet led to increases in triglyceride, insulin,

markers of free radicals, and blood pressure, as well as to increased signs of prediabetic insulin resistance. All of these changes were inhibited with large amounts of NAC.

Song D, et al. *European Journal of Pharmacology*, 2005;508:205-210.

• Alpha-lipoic acid may help in bone loss

In a cell study, researchers found that alpha-lipoic acid, an antioxidant, prevented bone loss caused by inflammation. Alpha-lipoic acid prevented the production of prostaglandin E2, a potent inflammation-causing compound.

Ha H, et al. *Journal of Immunology*, 2006;176:111-117.

• L-arginine improves blood vessel tone

L-arginine is the precursor to nitric acid, a neurotransmitter and regulator of blood-vessel flexibility. Vitamin C is needed to convert L-arginine to nitric acid. In a study of 31 patients with coronary artery disease, researchers asked the subjects to take either 10 grams of arginine or 500 mg of vitamin C daily for four weeks. The treatments were then switched for another four weeks. The L-arginine supplements led to a significant increase in blood-vessel flexibility, and vitamin C had a modest effect. In addition, the L-arginine led to a reduction in free radical damage to LDL cholesterol.

Yin WH, et al. *Clinical Nutrition*, 2005;24:988-997.

• Antioxidants may help in protein deficiency

Kwashiorkor results from a severe, life-threatening form of protein deficiency and is difficult to treat. Researchers theorized that sulfur-containing antioxidants might be beneficial. In a study of African children with kwashiorkor, researchers found that 600 mg of glutathione twice daily or 50 mg of alpha-lipoic acid twice daily improved recovery and survival. N-acetylcysteine did not have the same benefits.

Becker K, et al. *Redox Report*, 2005;10:215-226.

Vitamin B2 and Homocysteine...

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The take-home message from the study is that some people, for genetic reasons, may benefit more from supplemental vitamin B2 than folic acid when it comes to lowering homocysteine levels.

Reference: McNulty H, Dowey LRC, Strain JJ, et al. Riboflavin lowers homocysteine in individuals homozygous for the MTHFR 677CT polymorphism. *Circulation*, 2006;113:74-80. □

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