

Nutrition and Diet for Prostate Cancer

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Prostate Cancer Statistics

- Prostate cancer is the second most common form of cancer in men. (Non-melanoma skin cancer is #1)

In 2013,

- 228,590 men in the United States will be diagnosed with prostate cancer.*†
- 29,720 men in the United States will die from prostate cancer.*†

*Source: "A Snapshot of Prostate Cancer" *Cancer.gov*. National Cancer Institute at the National Cancer at the National Institutes of Health, Sept 2010. www.Cancer.gov/aboutnci/servingpeople/snapshots/prostate.pdf

National Cancer Institute: Prostate Cancer. www.cancer.gov/centertopics/types/prostate



Prostate Cancer Statistics

- Statistically, high rates of prostate cancer diagnosed in US but low rates of mortality associated with the diagnosis
- The leading cause of death in the United States and other industrialized countries is cardiovascular disease
 - This includes men with prostate cancer

Murray CJL, Lopez AD. Mortality by cause for eight regions of the world: implications for future research. *JAMA* 2001; 285:535-539



Factors Associated with an Increased Risk of Prostate Cancer

- Excess calorie intake and high body mass index
- High intake of red meats, processed meats and dairy products ("Western diet")
 - **No association between aggressive prostate cancer risk and total, low-fat, or high-fat dairy intake**
 - **Total dairy intake was associated with significantly increased risk for non-aggressive prostate cancer** Ahn et al. Dairy products, calcium intake and risk of prostate cancer in the prostate, lung, colorectal, and ovarian cancer screening trial. *Cancer Epidemiol Biomarkers Prev.* 2007;16 (12): 2623-2630
- Multi-vitamin use providing > Recommended Daily Allowance (RDA)
- Alcohol consumption
- Tobacco use (smoking)



Factors Associated with a Decreased Risk of Prostate Cancer

Consuming:

- a plant based diet providing a variety of vitamins, minerals, phytochemicals and fiber, and is low in calories
- more vegetables (tomatoes and other sources of lycopene, cruciferous vegetables and sources of allium such as garlic)
- green tea (lower rates of prostate cancer in Asian populations where green tea is consumed regularly)



Factors Associated with a Decreased Risk of Prostate Cancer, continued

Consuming:

- herbs and spices, especially turmeric
- ground flax seed meal
- dietary fiber found in vegetables, beans/legumes and nuts/seeds
- fatty fish that contain omega-3 fatty acids and vitamin D (like wild salmon)
- Soy (rich source of isoflavones)
- nuts, seeds, and green leafy vegetables as good dietary sources of vitamin E (sunflower seeds, almonds, hazelnuts, turnip greens)



Avoid excessive use of supplemental vitamins

- Do not consume more than the RDA for folic acid or B12 from fortified or enriched foods and/or supplements
- Increased cancer cell growth observed in men with higher serum folate levels – ? Role of folic acid supplementation from fortified and enriched foods Tomaszeski et al. *The Prostate*. 2011; 71: 1287-1293



Avoid Excessive Use of Multivitamins

- Overall, no link was found between multivitamin use and early-stage prostate cancer.
- However, heavy users (taking multivitamin pills more than 7 times/week) had **double** the risk of death from prostate cancer.
- Perhaps high-dose vitamins have little effect until a tumor appears. Then they spur growth.

J. Nat. Cancer Inst. 2007; 99(10):754-764.



Cancer is rare in India

Prostate cancer is 22 times more common in American men than in Indian men.

J Postgrad Med, 2003; 49:222-228.



Turmeric is used widely in Indian cooking.
Turmeric (Curcumin) interferes with cancer in the following ways:

- Reduces inflammation
 - Inhibits proliferation of tumor cells
 - Induces cancer cell self-destruction
 - Discourages growth of blood vessels that feed tumors
- Anticancer Res.* 2003; 23(1A): 363-98.
- Some 30+ studies are underway about turmeric. These are listed at www.clinicaltrials.gov.
 - Curcumin has poor bioavailability because it rapidly metabolized in liver and intestinal wall – it has been suggested that piperine (a chemical of black pepper) may improve bioavailability



Adequate Vitamin D, 25 (OH) serum levels are associated with a decreased prostate cancer risk

- Optimal blood levels for vitamin D (serum 25 (OH) vitamin D) are unknown at this time
- Some studies found higher levels of vitamin D in the blood decrease prostate cancer risk.
 - In a study of 19,000 men, those with vitamin D 25(OH)D levels below 16 ng/mL had a 70% higher incidence rate of prostate cancer than those with levels above 16 ng/mL. *Cancer Causes Cont.* 2000;11(9): 847–852.
 - Research suggests that maintaining serum vitamin D levels above 36ng/mL (90nmol/L) may be beneficial for multiple health outcomes. *Am J Clin Nutr* 2007;84(1):18-28.



It is difficult to get adequate vitamin D.

- If you get little sun exposure, consume few milk products, and eat no fatty fish such as salmon, you likely have low levels of vitamin D in your body.
- Consider testing your vitamin D level; aim for a serum level >20ng/mL.

Dietary Reference Intakes for Vitamin D and Calcium. Institute of Medicine, Nov 30, 2010. Goodwin, P. 2009 JCO 27:13



Few foods have vitamin D

- Cheese, cottage cheese, ice cream, and many brands of chocolate milk, yogurt and buttermilk have **no vitamin D**.
- 8 oz. of milk has 100 IU.
- 3.5 oz of salmon has 550 IU.

<http://www.ars.usda.gov/SP2UserFiles/Place/12354500/Data/SR23/nutrlist/sr23a324.pdf>



Vitamin D₃ supplements help.

- Adding 800 IU vitamin D₃/day would increase serum vitamin D about 6 ng/mL. Am J Pub Health. 2006; 96 (2): 252-261.
- Institute of Medicine recommends:
 - 600 IU vitamin D/day for adults 19–70 years
 - 800 IU vitamin D/day for adults 71 years and older
- There is no data to support high dose vitamin D supplementation. Barnett, CM & Beer, T. Urol Clin N Am. 2011. 333-342
- Research suggests that Vit D3 supplements are effective – check with your health care provider regarding recommended dose

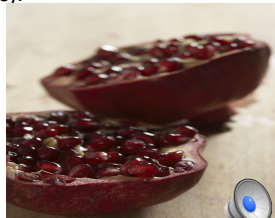


Pomegranate juice retards prostate cancer growth.

- Drinking 8 oz of pomegranate juice/day lengthened the time the PSA levels doubled (from 15 to 54 months).

Clin Cancer Res.2006; 12(13):4018-26.

- But other foods may also be protective e.g. cruciferous veg, green tea, turmeric



Fatty fish could be protective

- Men who ate moderate to large amounts of fatty fish were 2-3 x's less likely to develop prostate cancer than men who ate little fish. (30 year Swedish study of 6000+ male twins.)

The Lancet. 2001; 357 (9270):1764–1766.

Fatty fish include salmon, tuna, mackerel, herring sardines, lake trout



Can Fish Oil and Omega-3 Fatty Acids Increase Risk for Cancer?

- Recent study from Fred Hutchinson Cancer Research Center in Seattle WA claimed link between increased blood levels of omega-3 fatty acids, specifically EPA, DHA & DPA (fatty acids found in fatty fish) and increased incidence of prostate cancer. Research also showed higher levels of linoleic acid (omega-6) as associated with lower risk
- This study is a retrospective case controlled cohort design – using data from previous study known as SELECT. The SELECT study did not have same objective/endpoints as this study.
- This study does not show cause and effect
- Study does not address source of omega-3 fatty acids; i.e supplements vs eating fatty fish
- Did not look at other factors that can contribute to increased cancer risk; i.e. smoking, exercise, environmental toxicity, nutrition, family history of cancer, etc
- Take away message: consume moderate amounts of fatty fish, limit use of fish oil supplements



Omega 3 supplements do not prevent cancer.



- No significant association was found between omega-3 fatty acid intake and cancer incidence or in the health of patients after cancer treatment.

Evidence based researchers screened 4,834 titles, reviewed 356 articles, and included 52 articles in the review. For tumor incidence, they restricted to prospective cohort studies in humans. For clinical outcomes after cancer treatment, they restricted to randomized controlled trials. *AHRQ Publication.* No. 05-E010-2. Feb, 2005.



Other Considerations

- Flaxseed oil is a concentrated source of alpha-linoleic acid (ALA); studies have noted that the risk of prostate cancer increases in proportion to intake of ALA. The mechanism is not clear. While some studies observed no harm associated with ALA, until the research is clear we would not advise it. Since ALA is the precursor for EPA the recommendation is to choose fish oil which is high in EPA and provides much of the same benefits.
- Flaxseed contains an abundance of phytoestrogens in the form of lignans which have been shown to reduce the risk of prostate cancer. The seeds contain much less oil. If you choose flaxseeds be sure to grind them.
- While the studies are divided on the risk vs. harm of flaxseed oil with prostate cancer go ahead and enjoy flaxseed **more than 2 tablespoons per day can cause loose stools and GI discomfort*

Leitzmann MF. Am J Clin Nutr. 2004 80(1):204-16; De Stefani E. Cancer Epidemiol Biomarkers Prev. 2000 9:335-8; Giovannucci E. J Natl Cancer Inst. 1993 85(19):1571-9



You may be able to lower your risk of prostate cancer

- Maintain a healthy body weight
- Eat a low fat diet rich in colorful fruits and vegetables
 - Limit intake of red meat
- Consume good food sources of probiotics (beneficial bacteria) to promote a healthy gut and eat plenty of fiber-containing plant foods
 - Food sources of live beneficial microorganisms include cultured dairy foods (yogurt, kefir); naturally fermented vegetables (kimchee); miso (fermented soy bean paste)
- Obtain your vitamins and minerals from food
- Obtain adequate Vitamin D
- Don't exceed the RDA for Folic Acid, B12 and Calcium.
- Exercise




Other Considerations


- Dealing with the consequences of ADT (androgen deprivation therapy): weight gain, hot flashes, risk for bone loss
 - Modifying your way of eating to a "Mediterranean" diet with attention to the types of fats (replace saturated fats and especially trans fats with monounsaturated and polyunsaturated fats)
 - <http://www.oldwayspt.org/mediterraneandiet>



Other Considerations

- Dealing with the consequences of ADT (androgen deprivation therapy): weight gain, hot flashes, risk for bone loss
 - Change your way of eating to a “Mediterranean” diet. <http://www.oldwayspt.org/mediterraneandiet>
 - Exercise! More muscle = more active metabolism
- Hot flashes – limit or avoid caffeine, alcohol (including wine) and spicy foods
- Have your vitamin D level checked and consider having a bone density scan (DEXA) 

Other Considerations

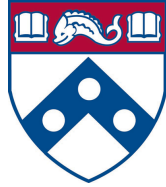
- “Anti-inflammatory diet”
- Ratio of omega-6 Fatty Acids to omega-3 Fatty Acids
- omega-6 : omega-3 to reduce inflammation suggested ratio is 2 -3 :1 Simopoulos P. The importance of the ratio of omega-6/omega-3 essential fatty acids. [Biomed Pharmacother.](#) 2002 Oct;56(8):365-79.
 - Reduce intake or avoid refined vegetable oils, conventionally raised meats, and processed foods: these are all sources of omega-6 Fatty Acids
 - Some amount of omega-6 Fats are essential to health but the “SAD” (Standard American Diet) is high in omega-6 fats. Good sources include nuts, avocado, whole grains 

A dietitian can advise how many foods and nutrients impact cancer risk.

- For locating a Board Certified Oncology Nutrition Specialist, visit the website www.oncologynutrition.org.
For locating a registered dietitian, email the American Dietetic Association at findanrd@eatright.org or call 1 800 877 1600 x4776.



Questions?



PennMedicine.org/Abramson and OncoLink.org

For more information, call 1-800-789-PENN (7366) and visit our websites:

Abramson Cancer Center

 Penn Medicine
