

Nutrition for Prostate Cancer: Research Review

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Doctors encourage men over age 50 (and in cases of relevant family history or African-Americans, beginning at age 40) to have an annual prostate specific antigen (PSA) test for early detection of prostate cancer. PSA is an enzyme released into the bloodstream at higher concentrations from prostate cells in cases of prostate inflammation, enlargement and prostate cancer. A PSA level above 4 ng/ml is cause for concern with respect to prostate cancer, as is a quickly rising PSA level from one year to the next even if the level is within the normal range (under 4 ng/ml).

If the PSA level arouses suspicion, then a transrectal ultrasound is scheduled to look for suspicious masses within the prostate gland. If such masses are detected, a needle biopsy is preformed and the suspicious tissue is assessed by a pathologist who gives the tissue samples a Gleason Score (from 1-10). The higher the score, the more malignant the cells are determined to be.

The good news is that if the cancer is detected early and is only confined to the prostate gland itself, then a surgical procedure (radical prostatectomy) results in a complete cure in most cases. However, if the cancer has extended through the prostate capsule to invade the bladder or the rectum, or cells find their way into the lymphatic system, the prognosis is not as encouraging. Metastasis of prostate cancer often involves invasion into bone and the liver. Thus, catching prostate cancer at an early stage is an important strategy considering it is the second leading cause of cancer death in North American men.



However, in some cases of localized prostate cancer, men refuse to have surgery because they know that they are likely to be left impotent and/or have urinary incontinence from nerve damage related to the surgical procedure. As well, statistics show that in the majority of cases, prostate cancer is a slow-growing tumor, which is usually not life-threatening. Thus, some men opt for watchful waiting, especially if they have a low Gleason Score and the tumor mass does not look very large upon transrectal ultrasound. If the PSA is rising very slowly, then they will often continue to refuse surgical intervention and/or radiation treatment.

Some doctors also recommend watchful waiting for men with localized prostate cancer who are at high risk for complications from surgery. For instance, men with pre-existing cardiovascular disease or who are morbidly obese and with uncontrolled diabetes fall into the category of non-surgical candidates.

In recent years, a number of clinical trials have been undertaken to see if specific dietary and lifestyle measures and/or nutritional supplements can slow the rise of PSA levels or possibly lower the PSA in men with localized prostate cancer. Other studies have included men with more advanced disease. A number of epidemiological studies and animal studies have suggested that certain nutrients can defend the prostate against prostate cancer and/or inhibit the growth of existing prostate cancer cells. With this knowledge, researchers have begun using some of these

nutrients in supplementation trials with men with various stages of prostate cancer.

Soy Isoflavones

In an intervention study, supplementation with 100 mg/day of soy isoflavones showed a favorable outcome in stabilizing PSA levels. Soy isoflavone supplementation was shown to decrease the rate of increase in serum PSA levels. These researchers concluded that their data suggests [soy isoflavones may benefit some patients](#) with prostate cancer by slowing the progression of the disease and therefore, potentially delaying the development of symptoms, improving quality of life, and perhaps even prolonging survival.¹

Vitamin D

The administration of cholecalciferol (vitamin D found in supplements) at physiological doses has been shown to decrease or slow the rise in PSA levels in men with prostate cancer without risk of vitamin D toxicity. In one study, 15 prostate cancer patients were given 2,000 IU (50 ug) of vitamin D daily and monitored every two to three months. In nine patients, the PSA level decreased or remained unchanged, and these results were sustained during the 21-month course of vitamin D administration.

Analysis also showed that there was a statistically [significant decrease in the rate of PSA rise](#) after administration of vitamin D compared with before vitamin D administration. The median PSA doubling time increased from 14.3 months prior to vitamin D administration to 25 months after commencing vitamin D supplementation. In fact, 14 of the 15 patients showed prolonged PSA doubling time after vitamin D supplementation. There were no side effects reported by any patient.²

The marked prolongation of PSA doubling time is an extremely important outcome. [Partin, et al.](#), showed that the risk of distal metastasis of prostate cancer (with respect to relapse after prostate cancer surgery) at five years was 65 percent to 75 percent when PSA doubling time was less than 10 months compared with 10 percent to 20 percent when PSA doubling time was greater than 10 months.³

Lycopene

In a Phase II clinical trial, researchers investigated the efficacy of [lycopene alone or in combination with soy isoflavones](#) on serum PSA levels. To be eligible for the study, men with prostate cancer had to have rising serum PSA following local therapy or while on hormone therapy. The study population included 71 patients with three successive rising PSA levels or a minimum PSA of 10 ng/ml at two successive evaluations prior to starting therapy.

Subjects were randomly assigned to receive a tomato-extract capsule containing 15 mg of lycopene alone (n: 38) or combined with a capsule containing 40 mg of a soy isoflavone mixture (n: 33) twice daily orally for six months. One patient on the lycopene arm did not receive therapy due to his inability to ingest the study pill.

There was no decline in serum PSA in either group. However, 35 of 37 (95 percent) patients in the lycopene group and 22 of 33 (67 percent) patients in the lycopene plus soy isoflavone group achieved stabilization in their serum PSA levels. The data suggest that lycopene and soy isoflavones have important adjunctive effects in PSA relapse and may delay progression of both hormone-refractory and hormone-sensitive prostate cancer.⁴

Antioxidants and Low-Animal-Fat Diet

Dr. Dean Ornish and colleagues conducted a study testing the [effectiveness of an intensive dietary and lifestyle program](#) as the sole treatment of prostate cancer in men with low to moderate Gleason Scores. The program consisted of a low-animal-fat diet (with the exception of some fish) and emphasis on fruits, vegetables, legumes, soy products and other vegetarian foods. He also supplemented these men with antioxidants (vitamin C, selenium and vitamin E) and included moderate aerobic exercise and stress management interventions in the treatment group. The daily antioxidant supplement dosages were: vitamin C, 2,000 mg; vitamin E, 400 IU; and selenium, 200 mcg.

Dr. Ornish, et al., studied 93 men who had chosen not to undergo conventional surgical or radiation treatment for prostate cancer. Half of these men were randomly allocated to the Ornish program, while the remainder served as a non-treated comparison group. After 12 months, PSA scores in the treated group decreased an average of 0.25 ng/ml or 4 percent, PSA scores in the non-treated group of men increased an average of 0.38 ng/ml or 6 percent.⁵

Ground Flaxseed

One hundred and sixty-one patients scheduled at least 21 days before prostatectomy were randomly assigned to one of the following arms: control (usual diet); flaxseed-supplemented diet (30 g/day); low-fat diet (<20 percent total energy); or ground flaxseed-supplement and low-fat diet. Blood was drawn at baseline and before surgery. Tumors were assessed for rates of proliferation and programmed cell death (apoptosis). The protocol was followed an average of 30 days.

Results showed that the men given the flaxseed supplement had a slower replication rate of their prostate cancer cells than did those not taking flaxseed supplementation and those only on a low-fat diet. The [researchers concluded](#), "Findings suggest that flaxseed is safe and associated with biological alterations that may be protective for prostate cancer."⁶ These findings also suggest that ground flaxseed supplementation may slow the proliferation rate of existing prostate cancer cells.

Saw Palmetto

A 62-year-old man with androgen-independent metastatic prostate cancer that had failed to respond to multiple treatment regimens stopped all conventional therapy and began taking 10 mg/day lycopene and 300 mg of saw palmetto three times a day. The patient's PSA level decreased from 365 ng/ml to 140 ng/ml after one month and to dropped to 8.1 ng/ml after two months. A repeat bone scan revealed an improvement of bony metastases. He continued the lycopene and saw palmetto, and [remained asymptomatic](#) for an unspecified period of time.⁷ Saw palmetto contains beta-sitosterol, which in experimental and animal studies, has shown an ability to induce apoptosis of certain prostate cancer cell lines. Most researchers attribute the dramatic disease-reversal effect in the above case to this biological process.

Pomegranate Juice

Researchers at the 104th Annual Meeting Scientific Meeting of the American Urology Association presented findings showing that men who had undergone prostate surgery or radiation treatment for localized prostate cancer benefited from drinking [8 ounces/day of pomegranate juice](#) if their PSA levels were still continuing to rise.⁸ The doubling time of their PSA was extended to 60 months, compared to only 15.4 months prior to pomegranate juice administration. Previously, a study in the *Journal of Clinical Cancer Research* showed that men with established prostate cancer

extended their PSA doubling time from 15 months to 54 months when they began drinking 8 ounces of pomegranate juice each day.

The body of evidence suggests that specific dietary and supplementation practices should be strongly considered in the adjunctive nutritional management of prostate cancer. Many medical doctors and oncologists are not familiar with the studies to support this approach. Thus, it falls to alternative health care practitioners to educate patients on this subject, including providing research to discuss with their attending physician.

References

1. Hussain M, Banerjee M, Sarkar FH, et al. [Soy isoflavones in the treatment of prostate cancer](#). *Nutr Cancer*, 2003;42;2:111-7.
2. Woo TCS, Choo R, Jamieson M, et al. [Pilot study: potential role of vitamin D \(cholecalciferol\) in patients with PSA relapse after definitive therapy](#). *Nutr Cancer*, 2005;5;1:32-6.
3. Partin AW, Pound CR, Rootselaar CV. [Natural history of progression after PSA elevation following radical prostatectomy: update](#). *J Urol*, 2003;169(4 suppl):935.
4. Vaishampayan U, Hussain M, Seren S, et al. [Lycopene and soy isoflavones in the treatment of prostate cancer](#). *Nutr Cancer*, 2007;59(1):1-7.
5. Ornish D, Weidner G, Fair WR, et al. [Intensive lifestyle changes may affect the progression of prostate cancer](#). *J Urol*, 2005;174:1065.
6. Demark-Wahnefried W. [Flaxseed supplementation \(not dietary fat restriction\) reduces prostate cancer proliferation rates in men presurgery](#). *Cancer Epidemiol Biomarkers Prev*, 2008;17(12):3577-87.
7. Matlaga BR, Hall MC, Stindt D, Torti FM. [Response of hormone refractory prostate cancer to lycopene](#). *J Urol*, 2001;166:613.
8. "Consumption of Pomegranate Juice May Benefit Men Treated for Localized Prostate Cancer." www.medicalnewstoday.com/articles/147647.php

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