



## DIETARY AND LIFESTYLE RECOMMENDATIONS FOR PREVENTING PROSTATE CANCER

### DIET AND LIFESTYLE

#### 1. EAT A LOW GLYCEMIC DIET

Diets high in refined carbohydrates, concentrated sugars, and fats trigger higher levels of insulin in the body, which contribute to greater estrogen production, inflammation, and growth factors (IGF-1) that support cancer growth.<sup>1</sup>

#### 2. EAT APPROPRIATELY

Eat moderate portions of food. Obesity is associated with an increased risk of certain cancers and an increased likelihood of cancer recurrence. In prostate cancer, overweight and obesity are associated with progressive disease and increased overall mortality.<sup>2</sup>

#### 3. EAT APPROPRIATE FATS

- Limit fat to 20% or less of your caloric intake in order to slow down prostate cancer.<sup>3</sup> At the very least, make sure your fat intake is less than 30%. (Typical American diets are closer to 40-45 %.) Diets high in animal fats and in omega-6 fatty acids help to fuel the inflammatory cascade that leads to increased 5-HETE levels, which support cancer cell proliferation.<sup>4</sup> Consider following Dr. Dean Ornish's very low-fat (10%), vegetarian diet, which has been shown to inhibit prostate cancer.<sup>5</sup>
- Concentrate on using less omega-6 oils, and more omega-9 and omega-3 oils (see below for specifics).
- Limit omega 6's (meat; dairy fat; corn, safflower, sunflower, peanut, soy oils). Check the type of oil in mayonnaise, salad dressings, etc. A "high intake of omega-6 fats through their effects on inflammation and oxidative stress, may increase prostate cancer risk."<sup>6</sup>
- For salad dressings, use olive oil (which contains squalene), grape seed oil, flax seed oil and/or walnut oil. Bake with canola oil, but fry or sauté with olive oil.
- Get sufficient omega 3 fatty acids. Sources are coldwater fish\*, nuts (especially walnuts<sup>7</sup> and filberts), ground flax seed (but not the oil) and wild game or free range animals. Walnuts, flaxseed, and pumpkin seeds are also good sources gamma vitamin E, which is associated with a decreased risk of prostate cancer.<sup>8</sup>
- Do not use flax seed oil. Although controversial<sup>9</sup>, flax seed oil supplementation may lead to an accumulation of unmetabolized linolenic acid, which increases oxidative stress.<sup>10</sup>
- Avoid peanut butter, which is high in omega-6 fats. Instead choose almond butter, which has fewer omega-6 fats (and is also excellent for heart health and cholesterol lowering).

#### **To protect your oils from becoming rancid and harmful:**

- Add the contents of one 400 IU mixed, natural, tocopherol vitamin E capsule to your canola oil and flax seed oil.
- Refrigerate all your oils, but especially canola, flax, and walnut oil.

A good source of natural vitamin E is Carlson Labs E-Gem Elite, which has all 8 forms of vitamin E (4 tocopherols and 4 tocotrienols). Carlson Labs is frequently carried in health food stores and is available through Vitacost.com (phone orders are best). Gamma tocopherol, which is not present in pure alpha-tocopherol supplements, nor in high levels in most mixed tocopherol supplements, may have the most cancer and heart protective activity of the tocopherols.<sup>11</sup>

**Avoid trans fats entirely.** Trans fats are hardened vegetable fats often found in margarine, and any processed food, such as baked goods and crackers, that contains partially hydrogenated vegetable oils. The amount of trans fat is now listed on the label.

#### 4. GET PLENTY OF WHOLE GRAINS, BEANS & LEGUMES, AND NUTS

These contain inositol hexaphosphate (IP-6), which has been shown in cell cultures and animals to have an inhibitory effect on prostate cancer cells.<sup>12</sup> In addition, these are great sources of fiber. Fiber traps, prevents reabsorption, and eliminates toxins in the bowel, as well as increases the “good” bowel bacteria.

#### 5. GET 2 SERVINGS OF SOY PER DAY

Soy contains “isoflavones”, which are natural phytoestrogens with the ability to block estrogen receptors throughout the body, thus blocking the stronger estrogens that are made by the body. Excess estrogen has been implicated in both benign prostatic hypertrophy and prostate cancer. In one experimental study, adding soy grits to the diet significantly decreased PSA values in men with prostate cancer.<sup>13</sup> In another study, a soy-based supplement delayed the rise in PSA in men who had already been treated for prostate cancer.<sup>14</sup> Men over 60 in particular may reap the benefits of dietary soy,

Try soy-based veggie burgers, tofu “hot dogs,” chili made with soy protein or soy beans, soy milk on cereal or in smoothies and baked goods, tofu or tempeh (good in stir fries and spaghetti sauce). Edamame (cooked green soy beans) make a delicious side-dish (they are a little like high protein lima beans).<sup>1</sup> Firm tofu (not silken), crumbled, makes a good ingredient in scrambled “eggs” and “egg” salad.

Soy isoflavones also appear to have a synergistic effect with curcumin in decreasing prostate inflammation and suppressing elevated PSAs.<sup>15</sup>

#### 6. FLAX SEEDS

- Flaxseeds contain a specific type of fiber called “lignans,” which help protect against prostate cancer.<sup>16</sup> They are turned in the gut to natural phytoestrogens, like genistein in soy. Lignans also help to block the action of the enzymes that transform testosterone into estrogen. Two studies from Duke University (North Carolina) have shown that adding flax seeds (approximately 1 ounce daily) helps to decrease cancer markers in men with prostate cancer.<sup>3,17</sup> Although not statistically significant, the improvement was slightly enhanced when combined with a lowfat diet.<sup>17</sup> As a bonus, their cholesterol levels also dropped significantly.
- Buy raw, whole, organic regular or golden flax seeds. These can be stored in an airtight container in a cupboard. They do not need to be refrigerated.
- Grind the flax seed in a coffee grinder (grind to a “fine” grind), then store in a sealed container in the freezer.
- Eat 2+ tablespoons of ground flax seed per day. Good on cereal, salad, soup, and in yogurt, or in smoothies. They make an excellent thickener for smoothies, and are a great addition to baked goods, such as whole grain banana bread, muffins, etc. (they help keep low-fat baked goods moist and delicious). Start with 1 T per day and work up. See Flax Seed information sheet.
- Flax seeds are an excellent source of soluble fiber, which helps to normalize bowel function. Flax seeds contain lignans, which may have a preventative role in prevent breast, colon, and lung cancers.<sup>18-20</sup>

#### 7. EMPHASIZE TOMATO PRODUCTS

Lycopene intake, which has been associated with a decrease risk of prostate cancer, helps to reduce the proliferation in prostate cancer cells.<sup>21</sup> Cooked tomato products have a richer concentration of available lycopene than raw tomatoes. Products made from tomato paste are more effective at raising serum lycopene levels.<sup>22</sup> Emphasize all natural tomato/pasta sauce, but also include juice, soup, V-8 juice, and dried tomatoes as desired. Other sources include watermelons and papayas, although they are not as concentrated. Avoid tomatoes if you have a sensitivity to plants in the nightshade family. In that case, use a supplement for adequate lycopene.

#### 8. EMPHASIZE CRUCIFEROUS VEGETABLES

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<sup>1</sup> Edamame is also an excellent source of dietary gamma-tocopherol (gamma vitamin E), which is associated with a lower risk of prostate cancer.

Cabbage, kale, broccoli, cauliflower, Brussels sprouts. 5-7 servings per week at a minimum. Cruciferous vegetables stimulate our body's detoxification system--both Phase I and Phase 2 detoxification processes in the liver. Their consumption is associated with a decreased risk of prostate cancer.<sup>23</sup> Cruciferous vegetables contain:

- Calcium D-glucurate which binds estrogen in phase 2 detoxification.
- Indole-3-carbinol and DIM, which may help prevent prostate cancer.<sup>24</sup> Soy and flax contain indole-3-carbinol, as well as cruciferous vegetables.
- Sulforaphanes, which also suppress tumor cell growth in vitro. Sulforaphanes affect cancer cell signaling in many ways<sup>25-28</sup>, including helping to turn on regulatory genes that cancer cells have turned off.<sup>29</sup> Broccoli sprouts have the highest concentration of these nutrients. Use in place of alfalfa sprouts.

## 9. EAT OTHER BRIGHTLY COLORED FRUITS AND VEGETABLES

**Get 10 portions of fruits and vegetables each day, especially bright-colored fruits and vegetables.** We are adapted to these over millennia of evolution.<sup>30-32</sup> The natural antioxidants and phytonutrients in these foods are associated with reduced prostate cancer risk, and are important supports during cancer therapy.

- Tomatoes daily, in any form (Tomato juice, soup, V-8 juice, tomato sauce, fresh or canned tomatoes, dried tomatoes)
- One serving of dark green leafy or cruciferous vegetables daily. Dark green leafy vegetables include spinach, chard, dark romaine lettuce, broccoli, kale, etc. Dark green leafy vegetables contain various important carotenoids (such as beta-carotene) and folic acid. See #8 for information on cruciferous vegetables.
- One or more serving of beta carotene rich fruits and vegetables daily, such as mangos, carrots or carrot juice, papaya, winter squash, cantaloupe, sweet potatoes
- Berries. Many berries contain anti-cancer phytonutrients in addition to their antioxidant effects. These include black and red raspberries, strawberries, lingonberries, black and white currants, gooseberries, velvet leaf blueberry, low-bush blueberry, sea buckthorn (sea buckthorn is in Beyond Essential Fats by Natura) and cranberries.
- Pomegranate juice (a high "polyphenol" variety) was shown to slow cancer cell growth in men.<sup>33</sup> However, if you have insulin resistance, a pomegranate polyphenol supplement may be more prudent.
- Fresh grapes, or raisins daily (limit portions due to higher glycemic index)
- Onions are an excellent source of well-absorbed quercetin, which has anti-cancer properties.
- Salads are an excellent way to get large amounts of raw vegetables. Don't limit yourself to just salad greens. Add other vegetables, fruits, and nuts to make your salad even higher in phytonutrients. One study showed that a high salad/olive diet was associated with a reduced risk of a particular type of breast cancer (Her-2+).<sup>34</sup>
- Juicing vegetables can be an excellent way to get some servings of vegetables. Carrots, celery, beets, cucumbers, kale, chard, spinach, broccoli, sprouts, etc. can all be juiced in order to obtain high amounts of phytonutrients. Be careful of making your juices too sweet, as even natural sugars can increase insulin levels, which are proinflammatory. Use celery, cucumber, and green vegetable juices to cut down on the sweetness of carrot juice and limit fruit juices to small amounts for flavor.
- Soups are also an excellent way to get vegetables. In the summer try chilled soups such as gazpacho; in the winter go for soups rich in different vegetables, legumes, and whole grains, such as minestone.

## 10. EAT FOODS HIGH IN NATURAL VITAMIN E, ESPECIALLY GAMMA-E AND DELTA E TOCOPHEROLS.

Vitamin E has 8 different forms—four are tocopherols (alpha, beta, delta, gamma) and four are tocotrienols (alpha, beta, delta, gamma). Supplementation with high doses of alpha-tocopherol (which is what many high dose vitamin E supplements contain) may actually increase the risk of prostate cancer.<sup>35</sup> However, natural forms of tocopherol from avocados, whole grains, nuts and seeds may actually help

prevent prostate cancer.<sup>35</sup> The richest nut and seed sources of gamma-E are walnuts (black and English), sesame seeds, pecans, pistachios, flaxseed, and pumpkin seeds. Almonds are an excellent source of alpha-tocopherol, so mixing your nuts up is a great way to get the whole range of vitamin E.

## 11. EAT ORGANIC.

Organic foods are free of pesticides, whose breakdown products are hormone disruptors. Organic foods contain more trace minerals and other nutrients such as flavanoids (19-60% more), which are naturally occurring antioxidants.<sup>36</sup> It is especially important to use meat, chicken and dairy products that are hormone and antibiotic free.<sup>4</sup> Buy open water (wild), rather than farm raised fish.

## 11. GET ADEQUATE PROTEIN

- Vegetable sources of protein are the healthiest in terms of cancer prevention. For prostate cancer, soy protein is the best choice. Legumes, such as beans, peas, and lentils are good sources of low-fat protein, as well as providing complex carbohydrates, and fiber. Foods such as middle-eastern hummus; split pea, lentil, minestrone, or black-bean soup; East Indian dahl, three-bean salad, low-fat refried beans, etc. are all tasty and easy to find legume dishes. Nuts in small amounts also can be used to supplement one's protein intake.
- Whey protein is a good alternative source of protein, and is high in glutamine. High doses of glutamine increase the level of glutathione in normal cells and decrease it in cancer cells, making them more likely to be affected by chemo and radiation. Glutamine is also helps increase muscle after surgery, and helps to protect normal cells during chemotherapy and radiation.<sup>37,38</sup> The best whey protein will be:
  - organic or from cows that are grass fed and not subjected to bovine growth hormone, antibiotics, or pesticides.
  - low-heat processed and un-denatured, containing biologically active, immune boosting proteins.
  - One example is Source Naturals "The True Whey" which is available at Vitacost.com and is often available through local health food stores.
- For prostate cancer, it is better if you severely limit red meat. Choose low-fat poultry and fish. If you do eat red meat use organic free-range, grass-fed meat. This meat will tend to have lower omega-6 fats and higher of the cancer-preventing omega-3 fats, and will be free of hormones and antibiotic residues. However, all red meat will have a lot of arachidonic acid, which is pro-inflammatory to prostate cancer cells. Also avoid poultry skin, which is also high in arachidonic acid.
- Minimize the use of fluid milk, especially low- and non-fat milk, as their consumption is associated with an increased risk of prostate cancer.<sup>39</sup> This may be due to the hormones that are present in milk. Use only organic dairy products. Whole milk use has actually been associated with a lower risk of prostate cancer. However, it is best if you avoid all milk products, including cheeses, until more is known about the relationship between dairy consumption and prostate cancer.
- Please see the footnote on fish regarding mercury content.<sup>2</sup>

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<sup>2</sup> \*Avoid: tilefish, swordfish, shark, and king mackerel which have 0.73-1.45 parts per million of mercury.

- Use rarely: Red snapper, orange roughy, marlin, grouper, tuna steaks (bluefin, yellowfin [ahi], bonito, skipjack) American lobster, bluefish, halibut, sablefish, and Pollock, which have 0.2-0.72 parts per million.
- Use more frequently: cod, mahi mahi, canned tuna, crab (blue and Dungeness) haddock, whitefish, herring, spiny lobster, and perch, which contain 0.10-0.19 ppm.
- Use frequently: king crab, catfish, scallops, flounder/sole, salmon, oysters, shrimp, clams, and tilapia
- USDA Office of Seafood May 2001. There is a link to this and other sites that address safe seafood on our website, in the screen "Healthy food/healthy planet".

## 12. WATER

Drink 48-64 ounces per day (4-6 glasses). Use filtered, spring or purified water in preference to tap water or distilled water. Best storage is glass, next best is hard plastic, and worse is soft plastic.<sup>40</sup>

What else can you drink beside water? Try:

- ❖ green tea (see #13 below),
- ❖ ginger tea for its anti-inflammatory actions
- ❖ other herbal tea
- ❖ Rooibos (roy-bos) tea (has a slightly sweet and nutty flavor)
- ❖ Soy milk (unsweetened)
- ❖ Low-sodium V-8 juice and other vegetable juices, especially tomato based<sup>41</sup>
- ❖ Grain-based coffee substitutes (Cafix, Pero, Inka, Teeccino, etc.)
- ❖ 100% juices (in limited amounts & mixed with water to prevent high blood sugar and/or insulin)
  - Citrus juice (with pulp)
  - Apple juice (unfiltered)
  - Berry juices (raspberry, blueberry)<sup>42</sup>
  - Cranberry juice (unsweetened or combined with apple juice)
  - Red grape juice
  - Pomegranate juice (Either Jarrow Formulas Pomegranate Concentrate or PomWonderful)<sup>42</sup>

## 13. DRINK GREEN TEA

Green tea contains flavonoid compounds that help reduce inflammation<sup>43</sup> and green tea consumption is associated with a lower risk of prostate cancer.<sup>41,44</sup> Men in countries in which large quantities of green tea are consumed regularly have the lowest incidence of prostate cancer.<sup>45</sup> A positive side effect is that it may also help to decrease the risk of heart disease.<sup>46</sup> Some men may want to take a supplement. See Dr. Wright for specifics.

## 14. CURRIES: TUMERIC

Curcumin, which is food in the yellow spice, turmeric, has a number of different anti-cancer mechanisms for many different kinds of cancers<sup>47,48</sup>, including prostate cancer.<sup>49</sup> It is a potent anti-inflammatory, which is also important in cancer prevention.<sup>48</sup> It will work best when taken with other herbal anti-inflammatories. One small trial showed a decrease in high PSA levels from a supplement containing curcumin and soy.<sup>15</sup> Indian curries, which contain tumeric and ginger, are a wonderful way to get a combination of natural anti-inflammatories. Be sure to add the tumeric directly to the oil in order to maximize absorption. Some men may want to take a curcumin supplement. See Dr. Wright for specifics.

## 15. INCREASE YOUR DIETARY INTAKE OF RESVERATROL

Resveratrol, which comes from red grape skins has antioxidant and anti-aromatase activity and has cancer prevention activity<sup>50-52</sup>. Dietary sources include red grapes, peanuts with the skin, plums, raspberries, mulberries, cranberries, blueberries, and lignonberries. Wine has tiny amounts of absorbable resveratrol, with Pinot Noir containing the highest levels. Some people may want to take a resveratrol supplement. See Dr. Wright for specifics.

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#### 16. REDUCE BETA-D-GLUCURONIDASE.

Elevated beta-D-glucuronidase activity in the gut is associated with an increased risk for various cancers, particularly hormone-dependent cancers such as breast, prostate, and colon cancers.<sup>53</sup> Its activity is enhanced by a high animal fat diet. (Another reason to avoid meat; well-done meat is even more harmful). Fiber, lactobacillus, oranges, onions, garlic, and greens decrease beta D- Glucuronidase.

#### 14. EXERCISE

Reduces incidence of cancer, and increases immune function. In prostate cancer, exercise is particularly important for advanced cancers and for older men, and can even help with treatment side effects.<sup>54-57</sup> Resistance training can limit or even reverse some of these adverse effects during and following androgen reduction therapy.<sup>57</sup>

#### 15. AVOID SMOKING, SECOND HAND SMOKE, AND NICOTINE

Smoking affects more than just lung cancer risk. Smoking stimulates angiogenesis, which allows the cancer to develop its own blood supply to support its growth.<sup>58</sup> Nicotine is also mutagenic, interferes with some cancer therapies, and promotes tumor growth.<sup>59,60</sup> Tobacco smoke also contains polycyclic aromatic hydrocarbons (PAHs), which are also associated with an increases risk of prostate cancer.<sup>61</sup>

#### 16. AVOID EXPOSURE TO PESTICIDES AND OTHER TOXINS

There is sufficient evidence from population studies to implicate exposures to toxic metals, pesticides, polychlorinated biphenyls (PCBs) and polycyclic aromatic hydrocarbons (PAHs) to increased risk of prostate cancer.<sup>61-64</sup> While workplace exposure may provide the highest risk of exposure to heavy metals and pesticides, dietary exposures of PCBs (farm-raised salmon can contain as much as 40 times more PCBs than other food sources- <http://www.ewg.org/research/pcbs-farmed-salmon>) and PAHs (char-broiled meats) may also play a role.

#### 17. DECREASE STRESS

Work on stress management with a daily relaxation practice, such as meditation, yoga, imagery, sequential relaxation, prayer, etc. Explore the stressors in your life and consider changes that would make your life more meaningful and less stressful.

#### 18. SUPPORT AND CONNECTION

Mobilize, join or initiate a support group that will provide you connection, support and healing.

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Revised 8-31-14

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