

Prostate Cancer

The latest research updates

Green Tea

- Men who drank 5 or more cups per day had a 48% decreased risk of advanced prostate cancer compared to men who drank less than 1 cup per day.

Kurahashi, N et al. 2008



Nutritional Support

Lycopene

- **55%** decreased risk prostate cancer in those with highest blood levels compared to the lowest blood levels. Greene, G et al. 2007
- **60%** decreased risk of *advanced* prostate cancer in those with highest lycopene blood levels compared to lowest.

Key, TJ et al. 2007

Vitamin E

- **Men with the highest blood levels of gamma-tocopherol had a 5-fold decrease risk** of prostate cancer. Zhang, J et al. 2007
- **32%** decreased risk of prostate cancer with 75 iu vitamin E.

Heinonen, OP et al. 1998

Soy Isoflavones



- Genestein and Diadzein
- 58% decreased risk prostate cancer in the group with the highest intake of soy. Nagata, Y et al. 2007
- 60% decreased risk prostate cancer in those with the highest blood levels of isoflavones genistein and diadzein.

Akaza H, et al. 2007

Nutritional Support

Selenium

- 974 men were given either 200 mcg selenium or placebo for 4 ½ years and followed for an additional 6 ½ years.
- The selenium group experienced a **63%** decreased risk prostate cancer.

Clark, LC et al. 1998

Resveratrol

- Men who drank 4-7 glasses per week red wine had a 48% reduction in risk of prostate cancer, and a 57% reduction in the diagnosis of **high grade aggressive** prostate cancer.

Schoonen, WM et al. 2005

Resveratrol

- Mice were given the amount of resveratrol found in **one liter** of red wine per day.
- Mice who consumed this diet had an **87%** reduction in **aggressive** prostate cancer.

Harper, CE et al. 2007



Food and Prostate Cancer Risk

- Men who ate 5 or more servings of red meat a week had a **79%** increased risk of developing prostate cancer.
- 63% increased risk for those with highest dairy intake.
- A dietary pattern which consisted of high intakes of red and processed meat, fried fish, hamburgers, chips, high-fat milk, and white bread was associated with an 82% increased risk prostate cancer.
- 23% decreased risk in those with highest tomato intake compared to the lowest tomato consumption.
- 59% decreased risk advanced prostate cancer with the highest vegetable intake, mostly broccoli and cauliflower.
- 43% decreased risk prostate cancer in men who ate fish at least once a week versus no intake of fish.

Inflammatory Pathways

- Research has shown that *inflammation* can play an important causative role in prostate cancer.
- An inflammatory pathway that is critical for prostate cancer is the **5-LOX** enzyme pathway.
- Arachidonic acid—found in high amounts in red meats, egg yolks, dairy, and saturated fats—is the raw material used for the 5-LOX pathway to produce highly inflammatory metabolites.
- The end product of the 5-LOX pathway is 5-HETE—a very powerful inflammatory chemical.



Consumption of arachidonic acid-rich foods such as egg yolk, red meat, poultry, dairy products, organ meat.



Consumption of arachidonic acid precursors/stimulating foods such as omega-6 fats and high-glycemic carbohydrates.

EXCESS ARACHIDONIC ACID IN THE BODY

Increased production of **5-lipoxygenase (5-LOX)**
(facilitates the propagation, infiltration,
and metastasis of cancer cells)

Increased production of
5-hydroxyeicosatetraenoic acid (5-HETE)
(interferes with programmed
cancer cell death (apoptosis))

Excess accumulation of
leukotriene B4
(pro-inflammatory compound
that attacks the joints,
arterial wall, and other tissues)

5-LOX Inflammatory Pathway

- 5-LOX levels were **6-fold** higher in cancerous prostates compared to normal prostates.
- 5-HETE levels were **220%** higher in cancerous prostates compared to normal prostates.
- Inhibition of 5-LOX caused *massive cell death* in prostate cancer cells.
- Arachidonic acid stimulated the growth of prostate cancer cells.
- This growth stimulation effect of Arachidonic acid was *completely blocked* by a 5-LOX inhibitor.
- Prostate cancer cells fed with Arachidonic acid showed a dramatic increase in the production of 5-HETE.

Flax Lignans and Prostate Health

- Highest in flaxseeds and sesame seeds
- Lignans are converted in the intestine to *enterodiols* and *enterolactone*.
- One study found that those with the highest blood levels of enterolactone were **82%** less likely to have prostate cancer than those with the lowest levels. Chang, ET et al. 2006
- Another study demonstrated a 34% reduced risk of prostate cancer in those with highest dietary lignan intake. McCann et al. 2005
- 161 men awaiting surgery for prostate cancer took 30 grams flaxseed for 30 days.
- The group receiving flaxseeds demonstrated slower tumor growth compared to control group. George, SL et al. 2007

Prostate Cancer

- Prevention
- Screening
- Diagnosis
- Treatment
- Recurrence

Screening Tests

- Free PSA
- PCA3
- Prostate MRI

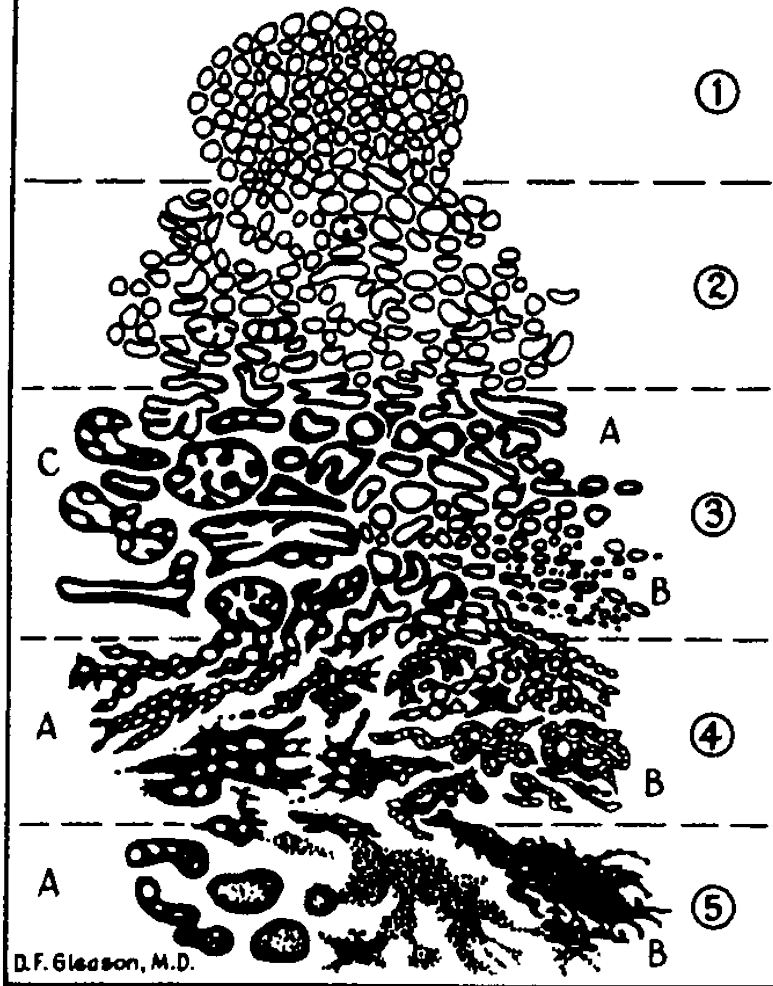
Prostate Cancer

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- Screening
- **Diagnosis**
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Gleason Score

- Measure of aggressiveness of cancer
- Very important prognostic indicator

PROSTATIC ADENOCARCINOMA
(Histologic Grades)



Gleason Score

- Add most common pattern to second most common pattern
- The higher the number the more aggressive the cancer
- High risk: 8 or higher
- Intermediate risk: 7
- Low risk: 6 or less

Effects of Lycopene Before Surgery

- 26 men diagnosed with prostate cancer awaiting surgery received 30mg lycopene or placebo for 3 weeks prior to surgery.
- **73%** of the lycopene group and only **18%** of the placebo group had negative surgical margins and/or had no spread of cancer beyond the prostate

Grignon, D et al. 2001

Prostate Cancer

- Prevention
- Screening
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- **Recurrence**

PSA Doubling Time

Pomegranate

- 46 men with a rising PSA after surgery or radiation therapy were given 8 ounces pomegranate juice daily.
- Average PSA doubling time increased from 15 months to **54 months**.

Pantuck, AJ et al. 2006

Soy Isoflavones

- 39 men with prostate cancer with a rising PSA after surgery, radiation, or hormonal therapy received 200mg per day soy isoflavones.
- Results demonstrated an increase in the PSA doubling time, with PSA stabilization in 83%.

Hussain, M et al. 2003

PSA Doubling Time

Soy Isoflavones

- 42 men with a rising PSA after surgery or radiation therapy received a supplement containing soy isoflavones, lycopene, milk thistle, and antioxidants.
- 260% increase in the PSA doubling time from 14.8 months to **38 months**.

Schröder, FH et al. 2005

Lycopene

- 37 men with a rising PSA after surgery, radiation therapy, or hormonal therapy were given 30mg Lycopene per day.
- 35 of 37 (95%) achieved a stabilization of their PSA level.

Vaishampayan, U et al. 2007

Lycopene

Lycopene

- 54 men with metastatic prostate cancer were randomized to orchidectomy alone or orchidectomy plus lycopene (4mg).
- 40% of the orchidectomy and 78% of the orchidectomy + lycopene group had a complete PSA response (PSA<4).
Average PSA at baseline: 250
- Bone scans showed a complete disappearance of cancer in **15%** of the orchidectomy group, and **30%** in Lycopene group.
- **74%** of the orchidectomy + lycopene group survived compared to only 56% of the orchidectomy alone group.

Ansari, MS et al. 2003

PSA Doubling Time

Vitamin D

- 15 men with a rising PSA after treatment received 2000 iu vitamin D.
- Vitamin D supplementation increased median PSA doubling time from 14 months to *25 months*. Jamieson M, et al 2005

Modified Citrus Pectin

- 13 men with a rising PSA after surgery, radiation therapy, or cryosurgery received 14.4 grams modified citrus pectin.
- Average PSA doubling time increased from 6.9 months to **18.2 months**.

PSA Doubling Time

Nutrition

- 10 men with recurrent prostate cancer were given instruction to increase intake of fruits, vegetables, beans, and whole grains, while reducing their intake of meat, dairy foods, and refined carbohydrates.
- Average PSA doubling time increased from 12 months to 112 months!
Saxe, GA et al. 2006
- 10 men with a rising PSA after surgery were enrolled in a low saturated fat, high-fiber, plant-based diet.
- PSA doubling time increased from 6.5 months to *17.7 months*.
Saxe, GA et al 2001