

Vitamin D

Not only may vitamin D play a role in inhibiting the growth of prostate cancer cells, new research suggests that vitamin D may benefit those who have been diagnosed by slowing disease progression.

Currently, there is no consensus regarding the optimal vitamin D intake for primary and secondary prevention.

Vitamin D has numerous functions in the body, but is best known for controlling calcium levels in the blood, and the formation and maintenance of bones. The role of vitamin D in the regulation of cell growth has implicated vitamin D in prostate cancer prevention.

Although called a “vitamin,” vitamin D is actually a hormone. Our body can make vitamin D with exposure of our skin to the UV radiation in sunlight. The amount of sunlight required to achieve this can vary considerably from person to person. At northern latitudes (like in Canada), the sunlight is not strong enough during the late fall and winter months to make vitamin D in adequate amounts ¹.

Several observations suggest that decreased vitamin D production may play a role in increasing the risk of prostate cancer:

AGE One of the strongest risk factors for prostate cancer, as men age their risk increases significantly. This increased risk coincides with an age-related decline in vitamin D production. With age, production of vitamin D becomes much less efficient, and deficiency can actually be quite common.

LOCATION Prostate cancer is significantly more common at northern latitudes (above 40°N) in

comparison to more southern regions ². This geographic distribution of prostate cancer may be due to inadequate production of vitamin D, causing a loss of cell growth regulation and an increased risk of cancer development.

ETHNICITY Impaired vitamin D synthesis may also explain the fact that men of African descent are at a significantly greater risk for developing (and dying from) prostate cancer. Melanin, the colour compound in the skin, can block sun-induced production of vitamin D. Those with darker skin have higher levels of melanin, and less efficient vitamin D production.

There is emerging evidence suggesting therapeutic benefits with vitamin D supplementation among men newly diagnosed with prostate cancer or recurrence of disease. However, research is still inconclusive; there is strong evidence that vitamin D is associated with a decrease in mortality for people with colon, breast, prostate and ovarian cancers, but other studies have found no association.

1. Rucker D, Allan JA, Fick GH, Hanley DA. Vitamin D insufficiency in a population of healthy western Canadians. *Can Med Assoc Journal* 2002; 166:1517-24.

2. Schwartz GG, Hanchette CL. UV, latitude and spatial trends in prostate cancer mortality: all sunlight is not the same. *Cancer Causes Control* 2006; 17:1091-101.

3. Tuohimaa P, et al. Interaction of factors related to the metabolic syndrome and vitamin D on risk of prostate cancer. *Cancer Epidemiol Biomarkers Prev* 2007; 16:302-7.

4. Woo TCS, et al. Pilot study: potential role of vitamin D in patients with PSA relapse after definitive therapy. *Nutrition and Cancer* 2005; 5:31-6.

The efficiency of vitamin D production by the body declines with age. As a result, the current recommendations for dietary vitamin D increase significantly with age:

Age (years)	Recommended intake
Up to 50	5 mcg (200 IU)
51 – 70	10 mcg (400 IU)
70 and older	15 mcg (600 IU)

These increased needs may be hard to meet with diet alone, as the average vitamin D intake among North American men aged 51 years and older is only 5 micrograms (mcg) per day⁵.

Based on evidence indicating the importance of vitamin D for Canadians' overall health, Health Canada and several US agencies will be meeting in September 2007 to discuss updating the recommendations for vitamin D.

Vitamin D occurs naturally in very few foods, most of which are not readily consumed in the North American diet. In Canada, all fluid milk (excluding buttermilk) is fortified with vitamin D, as are most margarines and soy beverages.

Food item	Serving	Vitamin D content	
		IU	mcg
Salmon, cooked	2.5 oz (75 g)	680	17.0
Salmon, canned with bones	2.5 oz (75 g)	584	14.6
Cod liver oil	1 tsp (5 ml)	428	10.7
Sardines, canned in tomato sauce	2.5 oz (75 g)	360	9.0
Milk (skim, 1%)	1 cup (250 ml)	104	2.6
Soy milk, enriched	1 cup (250 ml)	88	2.2
Margarine	1 tbsp (15 ml)	60	1.9
Orange juice, fortified with vitamin D	½ cup (125 ml)	52	1.3
Eggs, cooked (yolk)	2 eggs	52	1.3
Salmon oil	1 tsp (5 ml)	8.1	0.2

Source: Health Canada, Canadian Nutrient File, 2007b version; www.healthcanada.ca/cnf

For Canadian men aged 50 years and older, vitamin D supplements should be considered. While the dose in most multivitamins (400 IU) is sufficient and safe for those obtaining vitamin D naturally in their diet, some people may benefit from a higher dose. For those at risk for poor vitamin D status (such as those who are older, have darker skin, a poor dietary intake, do not expose their skin to sunlight, or are currently on androgen deprivation therapy), you may want to consider taking 1000 IU of vitamin D in a supplement. Be aware that the current Upper Limit for vitamin D is 2000 IU per day.

If you are considering higher levels of vitamin D (more than 2000 IU), you should talk to your doctor and discuss monitoring your blood calcium levels, as very high amounts of vitamin D can cause increased blood calcium.

The Prostate Education & Research Centre



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