IMPORTANT DIET AND SUPPLEMENT CONSIDERATIONS IN OUR FIGHT AGAINST PROSTATE CANCER

by Charles (Chuck) Maack – Prostate Cancer Advocate/Activist

DISCLAIMER: Please recognize that I am not a Medical Doctor. I have been an avid student researching and studying prostate cancer as a survivor and continuing patient since 1992. I have dedicated my retirement years to continued research and study in order to serve as an advocate for prostate cancer awareness, and, from a activist patient's viewpoint, to voluntarily help patients, caregivers, and others interested develop an understanding of prostate cancer, its treatment options, and the treatment of the side effects that often accompany treatment. There is absolutely no charge for my mentoring – I provide this free service as one who has been there and hoping to make your journey one with better understanding and knowledge than was available to me when I was diagnosed so many years ago. Readers of this paper must understand that the comments or recommendations I make are not intended to be the procedure to blindly follow; rather, they are to be reviewed as my opinion, then used for further personal research, study, and subsequent discussion with the medical professional/physician providing your prostate cancer care.

I suggest everyone reading this paper take the important time to read to the end, taking notes as you do so, in order to develop a diet and supplements that appear your palette would enjoy as well as provide the activity explained towards improved health and prostate cancer management.

Here is an important message from world renowned Medical Oncologist Stephen B. Strum regarding what to avoid:

Per Dr. Strum on 2/24/13 to a patient concerned about his HGPIN (*High-Grade Prostatic Intraepithelial Neoplasia)*

"Other things I would be doing would be to look at what fuels prostate cancer and to make changes in your lifestyle and diet and medications that would be in favor of preventing PC from growing and possibly from evolving from HGPIN.

Here's my list:

Cancer Fuels
1. Glutamine

2. High glycemic carbohydrates
3. LDL
4. Omega 6 fatty acids
5. Arginine, Copper
6. Glutamates, aspartates, cysteine 7. pro-inflammatory cytokines
8. bone-derived growth factors (BDGF)
9. Hypoxia
10. Hypercoagulability

Also important to make known to anyone considering "what supplements should I take" to read the message top Medical Oncologist Charles E. "Snuffy" Myers has to say in this regard:

Dr. Myers regarding effects of some supplements….

"I would like to give you some examples.

Vitamin D is key to health and an adequate level appears to lower the risk of colon, breast, and prostate cancer. Yet, on the other hand, too much vitamin D can be quite lethal.

Resveratrol appears to also be very powerful and safe over a wide range of doses, yet it can interact with the blood thinner, Coumadin, to make the blood so thin that serious bleeding can occur. On the other hand, resveratrol alone does not cause bleeding. As a result, Coumadin doses must be reduced if resveratrol is added.

Resveratrol can also interact with Zytiga to increase the Zytiga blood levels to a dangerous degree.

St. John's Wort appears to be an effective and safe mild antidepressant, yet it acts to destroy many important prescription drugs, including those used in kidney transplantation and many drugs to

treat prostate cancer.

I hope you now understand why I cannot give you a simple list of supplements that all men with prostate cancer should take."

Therefore, readers, take the important time to check on any supplements you intend to purchase. Determine if they will have an effect on other supplements or medications you are prescribed. Determine the actual safe dose levels to take.

I recently came upon a couple papers that indicate that supplements will provide no help in controlling existing prostate cancer. I feel it necessary to provide this information prior to your reading a list of supplements that have been recommended by physicians so that you, the reader, can make your own decision.

Supplements: Do They Have Any Effect on Prostate Cancer?

It appears from the following papers supplements do not have any effect on existing cancer. The importance to one's general health is more in proper nutrition and life-style that includes vegetables, grains, fish, fruit, watching calories, and exercising regularly. Though even this regimen will have no effect on cancer control, it has been studied and confirmed that it can reduce the risk of cardiovascular disease.

http://emedicine.medscape.com/article/453191-overview

http://emedicine.medscape.com/article/453191-overview#aw2aab6b3

Please read and make your own decision if purchasing supplements are in your best interest.

Regarding Diet and Supplements:

Among the things learned from national/international conferences on Prostate Cancer, reliable information found on internet medical websites, and information saved to files from Stephen B. Strum, M.D., FACP, as well as the review of a paper from a January 2006 Man-to-Man meeting describing recommendations by

Charles "Snuffy" Myers, M.D., both renown and highly respected Medical Oncologists who specialize in Prostate Cancer research and treatment:

DIET:

A "Mediterranean Diet" (Italian, Greek, Lebanese, Moroccan, Egyptian) is strongly recommended for all PC patients. No red meat, no dairy products (milk, egg yolk, cheese, etc.). Increase fish intake (decreases metastasis and PC recurrence), vegetables, tomatoes, olive oil (see URL below), almonds, pistachios, hazelnuts (monounsaturated fats). Increasing intake of monounsaturated fats causes progressive drop in PC. If your preference for fish oil is from supplements, then one should try to obtain "Nordic Naturals" on the internet www.nordicnaturals.com since, according to both Myers and Strum, it is important to have quality and this product provides that assurance.

Nordic Naturals is somewhat expense with a one month container with combination ingredients of just over 1,000mg costing around $30.00. On days that one of his choice fish products, King Oscar sardines, is consumed, Dr. Myers skips his Omega-3 supplement (Read more on Omega-3 below). Both see no reasonable reason to be consuming flaxseed in any form as a PC supplement.

Review http://www.mdlinx.com/urology/medical-news-article/2015/05/27/dairy-products-prostate-cancer-all-cause/6147406/ or http://tinyurl.com/pzqfj2l then draw your own conclusions as to paying attention to the numerous recommendations to avoid dairy and meat products to enhance longevity.

Scientists in China and the USA have teamed up to make an anti-prostate cancer drug from an active ingredient in cruciferous vegetables:

CRUCIFEROUS VEGGIES INTO ANTI-PROSTATE CANCER DRUG

Indole-3-carbinol ... a well known product of the breakdown of a compound found in cruciferous vegetables ... is considered a "promising chemopreventive agent which has shown efficacy against tumors in various tests on animals," the researchers say. However, indole-3-carbinol breaks down rapidly in the human digestive system and is too weak to have much impact on existing tumors.... To make indole-3-carbinol into a more potent antitumor agent with improved chemical stability, the scientists used it to make a chemical called OSU-A9 {[1-(4-chloro-3-nitrobenzenesulfonyl)-1H-indol-3-yl]-methanol}, which is acid-proof. The new compound is 100 times more

powerful than the original at causing cancer cells to die off by apoptosis (cell suicide).
http://psa-rising.com/eatingwell/?p=25

More here regarding cruciferous vegetables:

http://www.drlam.com/opinion/cruciferous_vegetables.asp

ANOTHER ARTICLE:

(Ivanhoe Newswire) -- An anti-cancer compound found in broccoli and cabbage works by blocking a key enzyme associated with rapidly advancing cancer.

The compound found in the veggies, indole-3-carbinol, is already in human clinical trials because of its ability to stop breast and prostate cancer growth in mice. The new findings are the first to explain how indole-3-carbinol stops cell growth.

Researchers at the University of California, Berkley, showed that indole-3-carbinol inhibits the enzyme elastase. Elastase at high levels has been linked to a poor prognosis, decreased response to chemotherapy, reduced response to endocrine treatment and a reduced survival rate in patients with breast cancer.

These new findings could lead to the development of an improved version of the chemical that could be used as a drug to work against breast and prostate cancer tumors.

“Humans have co-evolved with cruciferous vegetables like broccoli and Brussels sprouts, so this natural source had a lot fewer side effects,” study coauthor Gary Firestone, UC Berkley professor of molecular and cell biology, was quoted as saying.

Indole-3-carbinol is only one of many plant-derived chemicals that Firestone is investigating in his laboratory as potential anti-cancer agents.

SOURCE: *Proceedings of the National Academy of Sciences*, published online Dec. 5, 2008

ASPARAGUS:

There has been an article making the rounds regarding Asparagus as having strong anti-cancer properties. That article is below and the "snopes" watchdog only remarks about the article as not being able to determine its validity, but that the properties of Asparagus certainly might have anti-cancer properties. Take a read and draw your own conclusions.

http://www.snopes.com/food/ingredient/asparagus.asp

Here are more supportive articles regarding Asparagus:

http://www.diseaseproof.com/archives/healthy-food-asparagus-real-health-food.html

http://lifestyle.iloveindia.com/lounge/benefits-of-asparagus-1303.html

Personally I like Asparagus, so I intend to add Asparagus to my eating pleasure and am considering purchasing and steaming fresh Asparagus when in season and puree it to save in the fridge and try the four tablespoons in the morning and four tablespoons in the evening. In off "fresh" season, I'll purchase canned and do the same. I figure "what the heck!?" Nothing to lose and maybe much to gain.

And I think it important that everyone take the time to review the following presentation regarding the importance of determining how to cause "anti-angiogenesis" with the right foods to reduce cancer presence as well as to hopefully prevent cancer development in the first place:

http://www.youtube.com/watch?v=B9bDZ5-zPtY

and there are several papers regarding anti-angiogenesis on the internet including this one that describes the best food sources:

http://foodtocure.com/a-list-of-anti-angiogenic-foods/

This paper explains the importance of watermelon as an antioxidant:

Watermelon is the best fruit for men's health; here's why
http://tinyurl.com/ogjzq2o

IMPORTANT CONSIDERATION IF EXPERIENCING BONE ISSUES OR TO STRENGTHEN BONE AS WELL AS TO INCLUDE IN YOUR VITAMIN INTAKE IMPORTANT VITAMINS FOR YOUR GENERAL HEALTH IS THE FOLLOWING:

Medical Oncologist Stephen Strum, a specialist specifically in research and treatment of prostate cancer, determined a more promising supplement to deal with several PC/health issues, but particularly bone issues, that is available from Life Extension Foundation (LEF) – www.lef.org - known as "Dr. Strum's Intensive Bone Formula, 300 vegetarian capsules." (See: http://tinyurl.com/87n69ru then click on "Supplement Facts"). Ten capsules are taken daily, three in morning, three in afternoon, four in evening, and come 300 to a bottle – a thirty day supply. Important to read the "Caution" information. The ten capsules content provide most of the important supplements in appropriate doses to improve bone health and can replace the purchase of multiple supplements (Vitamin D3, Vitamin K2, Calcium, Magnesium, Zinc, Potassium, Cissus quadrangularis extract, Boron, and Silica – importance of each explained). Certainly worth consideration.
The potassium citrate alkalinizes your urine and helps promote bone formation. You need to monitor your serum potassium while on this supplement if you are on any drugs that cause potassium retention--discuss with your local MD. This could be considered an expensive formula at around $50 per month, but when considering that it replaces separate purchases of the vitamins listed, that price is not as significant.)

SOME CONSIDERATONS WHEN "DINING OUT:"

6 Best Picks and Skips at the Salad Bar

Salad bars can be diet salvation or junk-food minefields. Here's how to get from one end to the other without detonating an explosion of bad fats, sodium, sugar, and refined carbs.

1. Go dark on greens: Build a vitamin- and fiber-packed foundation by starting with roughly 1 cup of spinach and romaine leaves (for more than half of your daily vitamin A and all of your vitamin K, plus some folate and vitamin C). Skip 'em:

Lighter greens tend to offer less nutrition. Iceberg lettuce, for instance, delivers only about 7% of the A you need, some K, and not much else.

2. Go bright on veggies: Next, add about 1 cup of the most colorful crudités -- think broccoli, carrots, cherry tomatoes, green and red bell peppers, beets. Ounce for ounce, vibrant veggies give you more fiber, minerals, vitamins, and disease-fighting antioxidants than their paler companions, like celery and cucumbers. Skip 'em: Anything coated in mayo or an indefinable dressing, including carrot-and-raisin mixes, coleslaw, and potato salad.

3. Choose lean proteins: Aim for about 1/2 cup of these. Chickpeas and kidney beans are nifty sources of fat-free protein (6 grams each). Sliced hard-boiled eggs (8 grams) are another smart choice, just limit the yolk to limit the fat. Skip 'em: Chicken, tuna, or crab salads -- they're usually made with high-fat mayo; three-bean salad, which typically is afloat in a sea of oil; and cottage cheese, which is high in aging (read artery-clogging) saturated fat.

4. Sprinkle on extra flavor and crunch: Like cheese? Add 1 tablespoon of Parmesan (22 calories) to punch up the flavor, or 1 tablespoon of walnuts or sunflower seeds for some healthy crunch. Both have good-for-your-heart fats that help your body absorb the nutrients in all those veggies. Skip 'em: Cheddar cubes -- you'll quickly eat more than you need; croutons -- they may look harmless but at 100 calories per 1/4 cup, they're usually high-cal booby traps of refined carbs, sodium, and trans fats. Ditto for crunchy Asian noodles.

5. Dress for success: Now swirl on about 1 tablespoon of heart-healthy olive oil, a splash of vinegar, a grating of pepper, and toss, toss, toss. Ask any chef -- it's the secret to a perfect salad. Thorough tossing ensures that all the flavors and textures are evenly distributed and lets you use minimal dressing to maximum effect. Skip 'em: Walk right past those vats of ready-made salad dressings. Even the low-fat or fat-free versions are usually loaded with salt, sugar, and additives. And just 2 tablespoons of regular blue cheese or ranch have about 160 fat-packed calories.

6. Prefer a fruit salad? Easy. Go for whatever's fresh -- melons, berries, pineapple, kiwi -- and top with 1 to 2 tablespoons of chopped walnuts or sunflower seeds for a sprinkling of good fats and crunchy flavor. Then buy a small container of low- or no-fat yogurt or cottage cheese for creamy protein minus the saturated fat in dairy foods. Skip 'em: Syrupy canned peaches, apricots, pears, etc. They have far more calories and fewer nutrients than fresh fruit.

And the list goes on and on regarding the importance of diet and nutrition.

SUPPLEMENTS:

Important among supplements has become **VITAMIN D3** Cholecalciferol. 95% of men have been found to be deficient in this Vitamin, particularly those over age 70. This vitamin is essential for brain function, lung function, the immune system, lowers the risk for most common cancers as well as their recurrence, lowers the risk for high blood pressure, diabetes and osteoporosis, and reduces oxidative stress to cells. Vitamin D3 converts into 25-hydroxy Vitamin D3 and is stored in fat. Optimum serum 25-hydroxy Vitamin D3 levels should be at least 65ng/ml. According to the following, the accuracy of laboratory readings of 25-hydroxy Vitamin D levels are faulty. When determining a more "true" 25-hydroxy Vitamin D level, subtract approximately 20% from the laboratory result. See: http://www.ncbi.nlm.nih.gov/pubmed/19756833

Accordingly, we should strive for a laboratory 25-hydroxy Vitamin D level between 75ng/ml to 94ng/ml in order to have reached a "true" range between 60ng/ml and 75ng/ml. Except for those who spend a great deal of time in the sun, most PC patients need 5,000 to 10,000 IU daily to reach these levels. Once reached a daily intake of 4000 IU will likely maintain. The pill form can be found available in 1,000 IU as well as 5,000 IU form for less than $10 in U.S. dollars from many manufacturers, and more from others. It is also available in lesser IU levels, but with higher levels you have fewer pills to consume. Since there are those with sufficient Vitamin D from sun exposure, before beginning the addition of a Vitamin D supplement, you should have your 25-hydroxy Vitamin D3 level determined, then, if deficient, have it measured again following a few months of increased Vitamin D3 intake to get to and maintain the recommended at least 65ng/ml level. Keep in mind that in order to reach a "true" 65ng/ml level, your laboratory result should be closer to somewhere between 85 to 90ng/ml. Regular checks at maintaining within this level are then recommended. Dr. Myers notes that he has found that the IU level of Vitamin D3 provided by many suppliers fail to meet the IU specification noted on the label. If on a Vitamin D3 supplement for a few months and your 25-hydroxy Vitamin D3 levels are not increasing, he recommends the Vitamin D3 sold at www.lef.org has been tested and its IU level is as labeled. The most active form is 1,25 dihydroxy D3 or Calcitriol. For chemotherapy patients, the addition of Calcitriol nearly doubles the effectiveness of Taxotere.
Open this Harvard Medical Center website to review six important things you should know about Vitamin D: http://tinyurl.com/bz6sdhm

WARNING: Anyone with pre-existing kidney disease, though often found to be deficient in Vitamin D, SHOULD NOT take higher doses of Vitamin D3 without physician approval. This highlights the importance of visiting with your physician to discuss Vitamin D3 deficiency as well as insure lab records rule out any kidney abnormalities. If none exist, then get tested to determine the 25-hydroxy Vitamin D3 serum blood level, and if deficient and with physician approval, either get more but safe sun exposure or begin a higher daily Vitamin D3 intake to reach a desired laboratory report of between 75ng/ml to 94ng/ml in order to have reached a "true" range between 60ng/ml and 75ng/ml before leveling off at around 4,000 IU daily. (Note: See "Food for the Kidneys" further down in these suggestions).

A May 2008 report from the University of Rochester Medical Center in New York makes note that by inducing a specific gene to increase expression of a key enzyme, Vitamin D protects healthy prostate cells from the damage and injuries that can lead to cancer. See:
http://www.news-medical.net/?id=38320

Soy isoflavones about 200 to 300 mg daily - But use caution as explained in this excerpt from "The Palpable Prostate" (http://palpable-prostate.blogspot.com/search?q=Soy) "Even if it were beneficial for preventing prostate cancer or even if it were beneficial in earlier stage disease there remains the possibility that it could be detrimental for later stage disease. Although not a formal study, clinical observations by Dr. Leibowitz, a medical oncologist, were that he was able to reverse PSA rises in some patients by simply removing soy and phytoestrogens from their diet. See Dr. Leibowitz on soy. Also see Willet Divides Prostate Cancer into Four."

I feel it necessary to comment further regarding soy isoflavones. As Dr. Leibowitz makes note in his paper, Medical Oncologists Charles E. "Snuffy" Myers as well as Stephen Strum are supportive of soy isoflavones under appropriate management of regular PSA and other testing to recognize any evidence of cancer progression in the off chance you are one of what Dr. Myers considers would be the rare patient who might experience the concern explained by Dr. Leibowitz. Dr. Myers, in his book "Beating Prostate Cancer; Hormonal Therapy & Diet, remarks that he takes 100mg of soy isoflavones twice daily as part of his diet. I would expect that "moderation" should be considered with soy as with most any product, and, importantly, if the PSA is rising, consider backing off on the soy since this could be a contributory factor.

Omega-3 fish oil (both Myers and Strum advocate obtaining Omega-3 fish oils from "Nordic Naturals"

Red wine 4oz. per week has been said to reduce PC by 6%

Calcium, as citrate or carbonate (carbonate is less expensive and according to Dr. Mark Moyad, a recognized expert in nutrition, is as effective as citrate), 800mg/no more than 1000mg is considered sufficient (it seems we are getting sufficient calcium, and too much calcium reduces the effectiveness of Vitamin D3). It is important that anyone considering supplementing with Calcium (as well as many other products) first make their physician aware and current levels in the system determined. I make note of the following: <Stephen Strum, MD> I will try to answer your questions below in context with your biologic data. I use no more than 1,000mg supplemental calcium and I do use serum calcium as input into this decision. A more sensitive test is urine for spot calcium or even better calcium creatinine ratio (CCR).

Vieth definitions of safe urinary calcium: a mean urinary calcium- creatinine ratio < or = 1.0 (when calcium and creatinine are measured in mmol; < or = 0.37 when measured in mg/dl during vitamin D supplementation."

The key is to regularly monitor serum calcium as well as urinary calcium. If concerned about calcium levels, there are also other tests. The routine calcium (Ca) blood serum test determines calcium attached to proteins. This test is usually ordered to screen for bone disease or diseases of the parathyroid gland or kidneys. The supposed normal range is 8.5 to 10.2mg/dL, but there are studies that consider the higher portion of this "normal" range above 9.9mg/dl as possibly promoting prostate cancer cell development.

The Ionized calcium (iCa) blood serum test determines calcium that is free flowing and not attached to proteins. This test is usually ordered if you have signs of kidney or parathyroid disease, or if you have abnormal amounts of albumin or immunoglobulins. Supposed normal range for adults is 4.4 to 5.3mg/dL.

Always important to remember is that different labs may have different ranges, so if your level is "out of range," best to discuss with your physician.

Also to be aware: if you are supplementing with Vitamin D to raise your Vitamin D level within the "true" range of 60ng/ml to 75ng/ml as recommended for

prostate cancer patients by Medical Oncologists Stephen Strum and Charles Myers, it is important such supplementation be accompanied by regular monitoring of blood serum 25-hydroxy Vitamin D, blood serum and urine calcium levels, and parathyroid hormone level.

Elsewhere in this paper Dr. Myers makes note for men prescribed the bisphosphonate Zometa: "For example, in men on Zometa, it is hard to keep the calcium in the normal range - it all too easily slips into an abnormally low range, triggering hyperparathyroidism." Just more reasoning for regular calcium level testing

For info, neither Zinc nor Vitamin C have a role in prevention of PC though they do have a role in other areas. (See: http://www.medscape.com/viewarticle/583766).

SELENIUM AND VITAMIN E

SELECT is an acronym for the Selenium and Vitamin E Cancer Prevention Trial, which randomized 35,553 men 50 and older to the four study arms from 2001 to 2004. With the report of this trial some years back, it appeared that Selenium at 20mg and Vitamin E (as Alpha Tocopherol/AT) at 400 IU not only served no purpose in prevention or management of prostate cancer, but actually can play a small but definite role in PC development. The information from this trial was recently (2014) again resurrected. But with that resurrection, now comes this much more recent paper recently published in rebuttal of this resurrection and the SELECT results:

http://jnci.oxfordjournals.org/content/early/2014/02/21/jnci.dju005.extract

"both AT and Se have antioxidant roles and one could reasonably expect the opposite—that supplemental AT could compensate for an antioxidant deficit resulting from low-Se status" and "supplementation with AT in SELECT was eight times the amount (50 IU) used in the Alpha-Tocopherol, Beta-Carotene Cancer Prevention Study Group, which showed promise in the prevention of PCa. Thus, it appears that 400 IU on a daily basis of AT severely suppresses serum gamma-tocopherol, the prevalent dietary form of vitamin E in the United States. Gamma-tocopherol exhibits potentially beneficial chemical and biological activities not shared by alpha-tocopherol that make it potentially an important compound for PCa prevention. As a result, 400 IU AT could effectively diminish other critical tocopherol functions, which could be needed for subjects with low-Se status."

This now leaves us with the question as to just what is an appropriate and safe level of Vitamin E in either natural d-alpha tocopherol form or the synthetic dl-alpha tocopherol form to still serve as an important antioxidant, since apparently "high dosage" is the problem, not low dosage, that can alter the good effect of gamma-tocopherol and enhance PC development? One patient remarked that the synthetic dl-alpha tocopherol form may not be as effective as the natural d-alpha tocopherol form. For those trying to make a decision, I'll let you be the judge of which form you would prefer, and only suggest that a reduced measure of IU daily less than 400 IU would be the consideration to still serve its importance as an antioxidant along with gamma-tocopherol in the hopeful prevention of the diagnosis of prostate cancer, and as control of prostate cancer growth for those already diagnosed. A reasonable "low dose" appears to be somewhere less than 400 IU daily, and from the earlier trial that found alpha-tocopherol as dl-alpha tocopherol effective as an antioxidant that dose was only 50 IU daily. More often than not we find Vitamin E on the shelves in dl-alpha tocopherol form at 400 IU. It is likely available in lower dosage in drug departments, so you may want to see if so available. I happen to take the synthetic form of one 400 IU capsule every-other day and since I have been "living" with continued prostate cancer for over 21 years, have no idea if this dosage aids my experience of control and management of my cancer as an antioxidant in company with the medications I am prescribed; it apparently is not causing me any problem in that control.

COPPER is to be avoided since new blood vessels appear to have a strong dependence on copper for growth, but low copper levels are unlikely to affect existing vessels. By depriving cancer tumors of the copper they need to form new blood vessels, vascularization is inhibited. ***UC Berkeley*** and ***UC San Francisco*** researchers discovered a protein, hephaestin, that appears critical in moving iron to the bloodstream. The protein contains copper and cannot be produced in the absence of copper), I would suspect that the important issue regarding copper is that we do not ingest extra copper in any unusual dosage as a supplement. I would suspect the amount of copper within most multivitamins, as well as that in the Bone Up, is of sufficient low level to not be of extra concern. Anyone overly concerned could order up a "copper" blood serum test to ease that concern.

ADDITIONAL DESCRIPTION OF SUPPLEMENTS:

LYCOPENE: Lycopene – the red pigment in tomatoes. When you take lycopene from the test tube and add it to Prostate Cancer cells, it kills them because it initiates a suicide program within the cells. It is an antioxidant, a powerful one, but for some strange reason, its most powerful effect is in causing the Prostate Cancer cells to self-destruct. Lycopene is available over the counter in softgel form at 5 mg and 10 mg per softgel. Dr. Strum suggests 15 mg taken twice a day, Dr. Myers suggests 10mg three times a day. The FDA has recently announced that they have concluded that lycopene serves no purpose regarding prostate cancer; yet, if one searches the internet, there are also multiple studies that suggest that lycopene, in fact, does serve a very useful purpose – for example: http://highwire.stanford.edu:80/cgi/medline/pmid;15084515 or http://www.healthcastle.com/lycopene-prostatecancer.shtml. Interestingly, the following URL also supports lycopene for prostate cancer patients but more so in a natural state than with supplements: http://articles.mercola.com/sites/articles/archive/2014/06/28/lycopene-tomato-pill.aspx

More recently (2014) http://www.practiceupdate.com/journalscan/8003 concludes that lycopene was associated with reduced risk of lethal prostate cancer because with higher lycopene intake biomarkers in the cancer were indicative of less angiogenic potential.

WARNING FOR CONSIDERATION: Dr. Charles "Snuffy" Myers, M.D., another nationally recognized oncologist specializing in Prostate Cancer, had a word of warning in the use of these previous three antioxidants. If you are undergoing radiation therapy, he proposes you STOP using antioxidants until your radiation therapist tells you it is safe. He says this is important to remember! (The reasoning is that some studies indicate antioxidants inhibit the effectiveness of radiation. **It should be noted**, however, there are other studies that indicate antioxidants enhance the effectiveness of radiation as well as reduce side effects. Best to research, discuss with your radiation therapist, and draw your own conclusions).

FISH OIL/OMEGA-3 FATTY ACIDS: Not flaxseed oil, but Fish Oil. The evidence that the human brain requires Omega-3 is now considerable. It is being touted for dyslexia, schizophrenia, to prevent sudden death due to cardiac arrhythmia, to reduce the risk of hypertension, stroke, diabetes mellitus, multiple sclerosis, and the inflammation of arthritis. Dr. Myers says that the list goes on and on. In a study of patients who had a radical prostatectomy, it was determined that those who had three servings of ocean fish a week (and that means intake of

Omega-3) had a 70% reduction in the risk of developing recurrent Prostate Cancer. A 70% reduction just by eating ocean fish! He said that though it is early, it looks like Fish Oil/Omega-3 Fatty Acids is a very powerful factor for your general health that can also have a major impact on the evolution of Prostate Cancer. Fish Oil/Omega-3 Fatty Acids is available over the counter in softgel form, usually at 1000 mg per softgel. Many patients are being prescribed 4000mg per day. Soon-to-be or currently breastfeeding moms need to be especially careful to avoid excess mercury. Still, most people can do their heart and body right by eating one or two servings a week of omega-3-rich fish that is relatively low in mercury. Unfortunately, most fish contain *some* mercury, thanks to industrial processing. But the less time fish spend simply living in a mercury-laden environment or eating other fish containing mercury, the lower the contamination levels will be. So for low-mercury fish, we're talking small fish that don't eat many other fish (or fish meal) and don't have a long life span. Here are five good choices:

1. Salmon (wild): 1 gram of omega-3 fatty acids per 2 ounces of fish;* 0.014 parts per million mercury concentration
2. Herring: 1 gram of omega-3 fatty acids per 1 ounce of fish;* 0.044 parts per million mercury concentration
3. Sardines: 1 gram of omega-3 fatty acids per 2-3 ounces of fish;* 0.016 parts per million mercury concentration
4. Trout (freshwater): 1 gram of omega-3 fatty acids per 3-4 ounces of fish;* 0.072 parts per million mercury concentration
5. Pollock: 1 gram of omega-3 fatty acids per 6.5 ounces of fish;* 0.041 parts per million mercury concentration

*Oil content varies widely, depending on species, season, environment, diet, and packing and cooking methods. Cooking tip: Cook your seafood with garlic. Garlic has been shown to bind and reduce levels of mercury in the body, making it less toxic.

Here's the list of fish to AVOID:
• King mackerel: 0.73 parts per million mercury concentration
• Shark: 0.99 parts per million mercury concentration
• Swordfish: 0.98 parts per million mercury concentration
• Tilefish (Gulf of Mexico): 1.45 parts per million mercury concentration

So where does the beloved tuna fall? Pretty close to the middle of the road, actually, with mercury concentration ranging from 0.12 to 0.69 parts per million, depending on what kind of tuna you eat. And you'll need to eat anywhere from 3.5-

12 ounces to get 1 gram of omega-3 fatty acids, depending on how you take your tuna: Fresh tuna has the most and canned chunk light tuna has the least. But chunk light tuna also has the least mercury.

Suggested source of EPA and DHA (The Active Omega-3 Fatty Acids in Fish Oil): Ingest at least 500mg/day of EPA and DHA (the active omega-3 fatty acids in fish oil), taking concentrated, molecularly distilled, pharmaceutical grade Norwegian fish oil that is free of mercury, dioxins, etc. The brands of fish oil readily available with these characteristics are Nordic Naturals and Carlsson. A 16oz. bottle of Nordic Naturals in oil form provides 96 teaspoonfuls of 825mg EPA and 550mg DHA. If not available locally, search the internet for Nordic Natural Fish Oil in liquid form (less expensive than in tablet/gelcap form) where the product can be ordered.

Keep in mind that oil content estimates can be fairly rough, despite the best research efforts. A fish-oil supplement is a surefire way to get the omega-3 fatty acids you want and need. But talk to your doctor first. Fish-oil supplements are dangerous for certain people. Dr. Myers recommends a daily total Omega-3 intake of 4000mg. Here is some additional information regarding the importance of fish oil:

Food Fit for Your Kidneys

What heart helper can also keep your kidneys feeling fine? It's fish.

That's right. The omega-3s in fatty fish (like salmon) not only help your heart stay healthy, but they seem to keep kidney cancer away, too. Women in a study who ate fatty fish on a fairly regular basis lowered their risk of kidney cancer by 44 percent.

Mega Omegas
It's no fish tale! Almost 15 years of data show that when salmon and other fatty fish (like sardines and herring) regularly show up on your dinner plate, you could be giving kidney cancer the big kiss-off.

Researchers suspect that certain omega-3 fats in the fish may change the immune response of cancer cells in a way that thwarts their invasive process. But it's got to be fatty fish; slim swimmers (like cod) can have 20 to 30 times less omega-3s.

Fatty fish are also chock-full of vitamin D, which may play a protective role as

well.

BETA-CAROTENE WARNING! Dr. Myers warned that there is a growing body of evidence that Beta-Carotene, as a supplement, is actually *DANGEROUS* for Prostate Cancer patients. In a trial in which patients were given Vitamin E and Beta-Carotene, or Beta-Carotene alone, there was an increase in the death rate of those patients by 30%. A reviewer of these supplement recommendations made note that all the problematic trials used synthetic all-trans beta-carotene instead of natural mixed 9-cis/all-trans beta-carotene or mixed natural carotenoids. We would suggest if any of you are supplementing your diet with Beta-Carotene, that you look further into these obviously controversial findings.

VITAMIN C: Dr. Strum recommends 1000 mg of Vitamin C be taken after each meal to prevent fatty acid peroxide generation.

THE FOREGOING COMMENTS REGARDING VITAMINS C AND E NOTWITHSTANDING, more recent information provides the following:

CANCER VITAMIN STUDY: Vitamin C or E pills do not help prevent cancer in men, concludes the same big study that in November 2008 found these supplements ineffective for warding off heart disease. The public has been whipsawed by good and bad news about vitamins, much of it from test-tube or animal studies and hyped manufacturer claims. Even when researchers compare people's diets and find that a vitamin seems to help, the benefit may not translate when that nutrient is obtained a different way, such as a pill. "Antioxidants, which include vitamin C and vitamin E, have been shown as a group to have potential benefit," but have not been tested individually for a long enough time to know, said Howard Sesso of Harvard-affiliated Brigham and Women's Hospital in Boston." Thus, with the foregoing, I will leave it up to the individual to determine whether or not to include Vitamins C and E in their dietary supplements, as well as Lycopene and Selenium, which have also been more recently reported as having little effect with regards to prostate cancer.

COENZYME Q10 (CoQ10): Coenzyme Q10 is known to work best when given with Vitamins E and C. Since you are likely taking both these vitamins, it is then advantageous to take CoQ10 since is has been shown to prevent oxidation of LDL

cholesterol. In fact, the prevention of fatty acid oxidation may be just as important as decreasing fat consumption. Dr. Strum suggests Coenzyme Q10 be taken at a dose of 200 mg a day. An added benefit of CoQ10 is the improvement in heart function and diabetic control as well as the treatment of periodontal disease. Dr. Myers lists CoQ10 as a supplement he doesn't recommend but doesn't explain why. Yet, take note of the ninth paragraph in the following URL calling COQ10 "A Gentle Cancer Killer:" http://www6.miami.edu/ummedicine-magazine/fall2005/fstory4.html. The second paragraph in the following URL describes the effect of COQ10 on prostate tumors: http://www.med.miami.edu/news/view.asp?id=519 and gives a more descriptive explanation of the research. If prescribed statins it is important to recognize that statins rob the body of CoQ10, and this leads to severe muscle weakness, aches, heart failure, and poor cognitive brain function. Most important, anyone on statins should be taking at least 300 mg of CoQ10 three times a day.

A more thorough explanation of the importance of COQ10 can be reviewed here: http://tinyurl.com/3vz4qb2

CALCIUM (as a Citrate) with Vitamin D3: Calcium is much better absorbed in citrate form than carbonate. It is best taken at bedtime to lower excessive bone resorption by 20%, and should be taken in conjunction with Vitamin D to lower urinary calcium excretion. Over-the-counter Citracal contains 630 mg Calcium (as Ultradense calcium citrate) and 400 IU Vitamin D3 (as cholecalciferol) comes in caplet form. 2 caplets at bedtime are recommended.by the manufacturer. This same combination of Calcium as citrate/Vitamin D3 is often found at lower cost at outlets like Sam's Club or Costco but you should check the label because some contain a calcium combination of citrate and carbonate, and you only want the citrate. Your physician may recommend other dosages and other forms of calcium and/or Vitamin D.

GENISTEIN: Cancer cells use the enzyme tyrosine kinase as a growth factor. Soy genistein is a potent inhibitor of tyrosine kinase activity. Its use is suggested to decrease cell adhesion, slow proliferation and decrease metastatic potential. Dr. Strum recommends Mega Soy Extract. Each 700-mg capsule of Mega Soy Extract contains 134 mg of genistein, 122m mg of daidzein, and 24 mg of glycetein, and he advises two of these capsules a day. Mega Soy Extract can be purchased from Life Extension telephone 1-800-544-4440. A little side note regarding Genistein and Broccoli: Eating foods like broccoli and soy has been linked to lower cancer

rates, and California researchers say that they may have discovered what underlies this protective effect. Using cells in a lab dish, a team led by Erin Hsu, a graduate student in molecular toxicology at the University of California, Los Angeles has found that genistein, an isoflavone in soy, and diindolymethane (DIM), a compound made in the gut during digestion of broccoli, cabbage, kale and other cruciferous vegetables, reduce the production of two proteins needed for cancers to spread. Previous research has suggested that risk of prostate cancer may be reduced by dietary intake of DIM from broccoli and genistein from soy but this is the first study to find a clue to the value of dishes in which broccoli or other cruciferous vegetables are served with soy foods like tofu and edamame beans.

And here is an important paper regarding the molecular basis of the anti-cancer effects of genistein isoflavone in LNCaP prostate cancer cells: http://www.functionalfoodscenter.net/files/43434113.pdf

SAW PALMETTO? NO! This URL explains that purchasing saw-palmetto as a 5AR inhibitor is a waste of money:

http://www.youngagain.org/tnpc_chapter5.htm

Among the remarks:

"A typical analysis of saw palmetto shows that it contains a variety of fatty acids (capric, lauric, myristic, palmitic, palmitoleic, stearic, oleic, linoleic, linolenic, arachic, and eicosenoic), and minute traces of sterols and other plant chemicals that are biologically insignificant. Obviously, these herbal formulas just do not contain any effective amounts of active ingredients. That means you would have to eat about a pound of saw palmetto berries to get a basic dose of 330 mg of beta-sitosterol. Even with the most expensive "10x" (ten times) extracts of these herbs, one would still have to eat about two-hundred 500 mg capsules to get the 330 mg of beta-sitosterol! So, it is obvious that these herbs are ineffective, despite their continual promotion by the so-called natural health industry. Please understand that saw palmetto, Pygeum africanum, and other herbs and their extracts are simply biologically irrelevant, because they do not contain enough active ingredient. Even when the label says "85 percent fatty acids and sterols," you can be sure that it really means "nearly all fatty acids and almost no sterols." The saw palmetto products sold in America simply have no value, no matter how much advertising you have read. You won't see any saw palmetto or other herbal prostate product with any significant amount of beta-sitosterol in it."

BORON: Promotes healthy bone density. Shrinks prostate tumor size. Lowers PSA. May help prevent Prostate Cancer. Alleviates joint discomfort. In an Email to a patient, Dr. Strum recommended 9 to 12 mg daily

MODIFIED CITRUS PECTIN (MCP) – Boosts activity of the Immune System: Also known as fractionated pectin, is a complex sugar (polysaccharide) obtained from the peel and pulp of citrus fruits. MCP is rich in short, non-branched, galactose-rich carbohydrate chains. These shorter chains dissolve more readily in water and are better absorbed and utilized by the body than ordinary long-chain pectins. MCP alters the natural history of PC and appears to reduce the risk of metastasis – the spread of cancerous cells from one tumor to other sites n the body. For metastasis to occur, cancer cells must first clump together. Protein molecules called galectins appear on the surface of cancer cells. The more galectins present, the easier it is for the cancer cells to clump together and metastasize. According to preliminary research, MCP binds to the galectins. By doing so, it blocks the cancer cell's ability to clump and spread. Although MCP has no significant direct anticancer effect, it is felt that it can be an important natural anticancer strategy. Studies suggest that MCP is best used in preventing the metastasis of breast cancer, prostate cancer, lung cancer, and melanoma. There is not a lot of human data available yet. In one of the few human studies, MCP was shown to decrease the cancer growth rate in 4 of 7 men with prostate cancer as measured by a reduced rate of increase in PSA levels. The typical dosage recommended for adults ranges between 6 and 30g daily in divided doses (e.g., 6g one to five times daily). Medical Oncologist Stephen Strum recommends 5g three times daily. The MCP powder is usually dissolved by blending in water or juice. Here is a University of Georgia study: http://www.medicalnewstoday.com/articles/80268.php. Here is a August 16, 2011 report: New Study Shows Modified Citrus Pectin Activates Powerful Immune Responses (http://tinyurl.com/788z8xf)

Today I am thrilled to share with you groundbreaking research demonstrating the ability of a specific form of Modified Citrus Pectin (MCP) to greatly enhance immune function. The study found that MCP activated B-cells in a dose-dependent manner, and induced a highly significant dose-dependent activation of T-cytotoxic cells and Natural Killer (NK) cells. The NK-cell's cancer killing activity was demonstrated against live leukemia cancer cells. The study is published in the journal BMC Complementary and Alternative Medicine. The research focuses on MCP's immune-stimulatory properties in human blood samples, resulting in modulation of different arms of the immune system. Immune researchers at the Dharma Biomedical LLC (Miami, FL) are excited. "The dramatic ability of MCP to activate different components of both the innate (NK-cells) and adaptive (T-

cytotoxic) arms of the immune system, demonstrates that MCP can be used in a very strategic manner to support immune function, which may prove useful for a variety of immune compromised health situations," says lead researcher Dr. Steve Melnick. MCP induced an increase in B-cells, T-cytotoxic cells, and NK-cells in a dose dependant manner, meaning the higher the dosage, the greater the effect. Researchers demonstrated that MCP induced a dramatic ten-fold increase in NK-cell activation, and furthermore a significant 53.6% increase in the NK-cells' functional ability to identify and destroy leukemia cancer cells.

Mechanism of Action (How MCP Works)

Melnick further explains, "The Modified Citrus Pectin used in this study consists of various polysaccharides that come in contact with different receptors or proteins on the membranes of immune cells. The immune cells become activated as a consequence of this very specific interaction." Melnick continues, "What I found impressive was the selectivity, and in those cases the magnitude of the effect. For example, polysaccharides derived from mushroom species are known for their immunomodulatory effect. However, in my experience, those effects are considerably lower than observed in the case of T cytotoxic and NK cell activation with this Modified Citrus Pectin." USDA scientists that co-authored the study analyzed the specific structure of this MCP.

Critical Information for Optimal Immune Support

There are two important aspects to the end results of this study when it comes to NK cells. The first one is how many of our NK cells, a specialized subset of T-lymphocytes that destroy infected and cancerous cells are activated by MCP. In other words, how many are awakened from their "sleep" and ready to fight harmful invaders and cancer. MCP exerted a dramatic 10 fold increase in their activation, greater than the positive control Interleukin-2 (IL-2). Additionally, once the NK cells were activated, their actual functional activity level, and specifically against cancer, was demonstrated to be statistically significant.

MCP's Multiple Cancer-Fighting Properties

This significant increase in T-cytotoxic and NK-cell activation, together with a remarkable increase in NK-cells' ability to identify and destroy human leukemia cells, proves that the tested MCP is a powerful immune enhancing agent, with the ability to selectively increase cytotoxic immune activity against cancer and infections. With this new data on Modified Citrus Pectin's powerful immune effects, together with the extensive research on its ability to block cancer-

promoting galectin-3 molecules, we now have a much greater understanding of MCP's significant benefits in fighting and protecting against cancer. Ongoing research continues to demonstrate that MCP possesses numerous anti-cancer mechanisms of action that work to fight cancer from multiple angles.

I have seen first-hand the transformative power of MCP in helping to fight disease and restore health. While I was recommending MCP in my clinical practice for the treatment of cancer and heavy metal toxicity, I had always known that the benefits reached far beyond what had been scientifically proven at the time. After all, many of my patients who came to me for solutions to their chronic diseases became the vibrant examples of how MCP, used as part of an integrative and holistic health program, had not just added years to peoples' lives, but quality as well. Thanks to this recent landmark immune study, we now know that the powerful immune supporting actions offered by Modified Citrus Pectin represent a significant factor of this vibrant health equation."

Source: Ramachandran, C., Wilk, B.J., Hotchkiss, A., Chau, H., Eliaz, I., Melnick, S.J. Activation of Human T-Helper/Inducer Cell, T-Cytotoxic Cell, B-Cell, and Natural Killer (NK)-Cells and induction of Natural Killer Cell Activity against K562 Chronic Myeloid Leukemia Cells with Modified Citrus Pectin. BMC Complem. Altern. Med.2011, 11:59.

HERE ARE SOME INTERESTING SUPPLEMENT REMARKS IN A POST TO A PATIENT BY RENOWNED MEDICAL ONCOLOGIST SPECIALIZING IN PROSTATE CANCER RESEARCH AND TREATMENT, STEPHEN B. STRUM:

"Vitamin D. at a dosage of 800 international units per day is almost never sufficient to obtain optimal blood levels of 25-hydroxy D-3. The average dose required to achieve this is 8000 international units of vitamin D-3 per day. It is important to confirm this by obtaining 25-hydroxy D-3 levels as a dose of vitamin D is adjusted. This is called titration. It is also important to realize that the use of other supplements such as genistein will increase the production of 25-hydroxy D-3 by stimulating the hydroxylase enzyme that converts vitamin D3 to 25-hydroxy D-3. Interestingly and importantly, genistein also inhibits the enzyme that

breaks down the most potent form of vitamin D known as 1, 25 dihydroxy cholecalciferol. Therefore, the combination of vitamin D3 and genistein may be a potent combination to use in the prevention of prostate cancer as well as in the active therapeutic approach to prostate cancer; or for that matter any disorder in which vitamin D appears to be a crucial element, e.g. breast cancer, colon cancer, multiple sclerosis, Alzheimer's disease, colon polyps, psoriasis and others.

Statin compounds deplete the body of CoQ10. If you are prescribed statins you need to take a CoQ10 supplement in the order of 200 mg per day minimally. CoQ10 may also have anti-prostate cancer activity.

Persaud I, Narain NR, Woan KV, et al: Coenzyme Q10 induces apoptosis in human prostate and osteosarcoma cells.

Prostate cancer is the second leading cause of cancer deaths in men in the United States and often metastasizes to bone. Androgen-independent prostate cancer is highly resistant to the current standard of care and presents a challenge to quality of life. We have discovered a novel in vitro protocol that facilitates the solubilization of the lipophilic molecule Coenzyme Q10 (Q10). Q10 is naturally resident in mitochondria and has been described as a potent antioxidant and crucial in the production of ATP. We previously demonstrated a pharmacologic dose of Q10 (50uM) selectively induces apoptosis in human melanoma, while being supportive to normal keratinocytes and fibroblasts in vitro. In the present study, we tested the effect of Q10 on an androgen-independent prostate cancer model, PC3 and osteosarcoma 143b cells using proliferation assays. In addition, the effect of Q10 on mitochondrial polarity was investigated using JC-1 stain in the presence of Q10. At 200 ?M Q10, results show a reduction of 69.57% ± 7.56 and 74.51% ± 4.51 in PC-3 and 143b cells, respectively. Moreover, uptake and aggregation level of JC-1 in PC-3 mitochondria analyzed by flow cytometry revealed a significant increase in green fluorescence in Q10 treated cells, indicating mitochondrial depolarization, a hallmark of apoptosis. Taken together, the data suggest that Coenzyme Q10 is a viable anti-tumor agent with minimal normal tissue toxicity and may be useful in controlling disease progression of prostate cancer."

POMEGRANATE:

Pomegranate extract is an agent that alters the natural history of PC.

< Stephen Strum, MD >
Literature involving human trials indicates that pomegranate will increase the PSA doubling time (PSADT) but I have no literature that it will alter the frequency of PSA recurrence (PSAR) post seed implant. Pomegranate is a good antioxidant showing value in heart disease. I see no harm in using it. There is a lot of literature on pomegranate having anti-PC effects … such as:

Malik A, Afaq F, Sarfaraz S, et al: Pomegranate fruit juice for chemoprevention and chemotherapy of prostate cancer. Proc Natl Acad Sci 102:14813-8, 2005

Prostate cancer is the most common invasive malignancy and the second leading cause of cancer-related deaths among U.S. males, with a similar trend in many Western countries. One approach to control this malignancy is its prevention through the use of agents present in diet consumed by humans. Pomegranate from the tree Punica granatum possesses strong antioxidant and antiinflammatory properties. We recently showed that pomegranate fruit extract (PFE) possesses remarkable antitumor-promoting effects in mouse skin. In this study, employing human prostate cancer cells, we evaluated the antiproliferative and proapoptotic properties of PFE. PFE (10-100 mug/ml; 48 h) treatment of highly aggressive human prostate cancer PC3 cells resulted in a dose-dependent inhibition of cell growth/cell viability and induction of apoptosis. Immunoblot analysis revealed that PFE treatment of PC3 cells resulted in (i) induction of Bax and Bak (proapoptotic); (ii) down-regulation of Bcl-X(L) and Bcl-2 (antiapoptotic); (iii) induction of WAF1/p21 and KIP1/p27; (iv) a decrease in cyclins D1, D2, and E; and (v) a decrease in cyclin-dependent kinase (cdk) 2, cdk4, and cdk6 expression. These data establish the involvement of the cyclin kinase inhibitor-cyclin-cdk network during the antiproliferative effects of PFE. Oral administration of PFE (0.1% and 0.2%, wt/vol) to athymic nude mice implanted with androgen-sensitive CWR22Rnu1 cells resulted in a significant inhibition in tumor growth concomitant with a significant decrease in serum prostate-specific antigen levels. We suggest that pomegranate juice may have cancer-chemopreventive as well as cancer-chemotherapeutic effects against prostate cancer in humans.

Pantuck AJ, Leppert JT, Zomorodian N, et al: Phase II study of pomegranate juice for men with rising PSA following surgery or radiation for prostate cancer. J Urol 173:225A, 2005. PMID

Abstract 831

INTRODUCTION AND OBJECTIVE: Phytochemicals in edible plants can have cancer
preventive benefits through antioxidation and via gene-nutrient interactions. Pomegranate juice has been shown to be a rich source of polyphenolic flavonoids. Pre-clinical data suggested the ability of pomegranate juice to modulate the growth and progression of prostate cancer. To determine the clinical effects of pomegranate juice on patients with prostate cancer, a clinical trial was performed.
METHODS: A 2 year, single center, phase II, Simon two stage clinical trial for men with rising PSA after surgery or radiotherapy was designed based on a 20% response rate, an alpha of 5%, and 90% power. Eligible patients had a detectable PSA greater than 0.2 ng/ml and less than 5 ng/ml, and a Gleason score of 7 or less. Serial PSA measurements determined a baseline PSA doubling time. Patients were treated with 8 ounces of pomegranate juice by mouth daily (wonderful variety, equivalent to 1.5 mmol of total polyphenols per day) until disease progression. Clinical endpoints included safety, effect on serum PSA, and exploratory laboratory studies. Patients were followed in 3 month intervals for serum PSA, and blood and urine were collected for laboratory studies.
RESULTS: The study was fully accrued to 48 participants in two stages after efficacy criteria were met. There were no serious adverse events reported and the treatment was well tolerated. No patients developed metatsatic disease on study. Mean PSA doubling time significantly increased with treatment, from a mean of 14 to 26 months ($p < 0.048$). The slope of the mean log PSA decreased from 0.08 to 0.04 on treatment ($p < 0.019$). In vitro assays using pre and post treatment patient serum on the growth of LNCaP showed decreased cell proliferation and increased apoptosis ($p<0.07$). Pomegranate polyphenols were detected in the urine of all participants by LC-MS.
CONCLUSIONS: We report the first clinical trial of pomegranate juice in patients with recurrent prostate cancer. The positive and significant beneficial effects on PSA parameters achieved, coupled with corresponding laboratory effects on prostate cancer in vitro cell growth and apoptosis warrant further testing in a randomized, placebo controlled phase III study.

Pantuck AJ, Zomorodian N, Belldegrun AS: Phase-II study of pomegranate juice for men with prostate cancer and increasing PSA. Curr Urol Rep 7:7, 2006.

[PMID:16480662]

Introduction: There have been a number of reports recently on the preclinical, in vitro, and in vivo antiproliferative and apoptotic activities of pomegranate polyphenols in prostate cancer, including demonstration of a dose-dependent inhibition of cell growth/cell viability and induction of apoptosis in human prostate cancer PC3 cells associated with induction of Bax and Bak (proapoptotic); downregulation of Bcl-X(L) and Bcl-2 (antiapoptotic); induction of WAFl/p21 and KIPl/p27; a decrease in cyclins Dl, 02, and E; and a decrease in cyclin-dependent kinase (cdk) 2, cdk4, and cdk6 expression [I]. Aims: To determine the clinical and laboratory effects of pomegranate juice on patients with prostate cancer. Methods: An open-label, single-arm, 2-year, phase-2, Simon two-stage clinical trial for men with increasing prostate-specific antigen (PSA) after surgery or radiotherapy was performed. Eligible patients had a detectable PSA greater than 0.2 ng/mL and less than 5 ng/mL that was documented as increasing, enough pre-treatment PSA time points to calculate a baseline PSA doubling time, no hormonal therapy prior to entering the study, no evidence of metastatic disease, and a Gleason score of 7 or less. Patients were treated with 8 oz of pomegranate juice by mouth daily until meeting disease progression endpoints. Patients were followed in 3-month intervals for serum PSA and blood and urine were collected for laboratory studies. Results: The study was fully accrued after efficacy criteria were met. There were no serious adverse events reported. None of the patients developed metastatic disease on study. Mean PSA doubling time significantly increased with treatment, from a mean of 15 to 37 months ($P < 0.048$). In vitro assays using pre- and post-treatment patient serum on the growth of LNCaP showed a 12% decrease in cell proliferation and a 17% increase in apoptosis ($P = 0.0048$ and 0.0004, respectively).

Pomegranate juice provides polyphenols with an 8oz glass containing 570mg - in trials, daily consumption of pomegranate juice changed PSA doubling time from 15 months, to 54 months -and it is important that the pomegranate juice is deeply red; if its appearance shows any browning, it will likely be less effective to ineffective. Pomegranate in extract form is much less expensive than juice **as well as avoids the sugar content** of juice. Regarding Pomegranate Extract:

Puritan's Pride supplement manufacturers. Each capsule comes as 250mg, thus four capsules would be required daily for a total of 1000mg daily. With special sale deals costs about $16.00 per month plus S&H.
http://tinyurl.com/ygs8ffv

Life Extension Foundation. Each capsule come as 400mg, thus at least two capsules daily for only 800mg daily would require 2 bottles at a cost of $17.55 per bottle for non-members; $13.16 for members, thus over $35.10 per month for non-members, $26.32 for members (not sure if includes S&H).
http://tinyurl.com/yz9df58

POM Wonderful. Each capsule contains 1000mg and is considered the equivalent of an 8 ounce bottle of liquid POM Wonderful. If on automatic shipping every month, cost is $29.95 per month and shipping/handling free. This is likely the better product, since POM Wonderful is recommended by Medical Oncologists Stephen Strum and Charles E. "Snuffy" Myers.
http://www.pompills.com/pills/product_pills.aspx

Dr. Myers and Dr. Strum recommend the extract rather than the juice because of the sugar content in juice. Good for vascular health, has anti-PC properties, and some patients have noted that their otherwise high systolic blood pressure has dropped. Nuclear factor-kappaB (NF-kappaB) is found to be increasing during the transition from androgen dependent prostate cancer to androgen independent prostate cancer and thus a contributor to this transition. An interesting PubMed article describes pomegranate extract having the effect of inhibition of proliferation of NF-kappaB and induction of apoptosis of prostate cancer cells. This is just one study of many regarding the importance of pomegranate to the prostate cancer patient. This particular study can be reviewed at
http://www.ncbi.nlm.nih.gov/pubmed/18790748.

And here is more recent, 2014, support for those products that contain polyphenols:

DIET CONSIDERATONS TO HELP CONTROL/REDUCE PSA ELEVATION

A double-blind, placebo-controlled randomized trial evaluating the effect of a polyphenol-rich whole food supplement (such as pomegranate, green tea, broccoli and turmeric) on PSA progression in men with prostate cancer

http://www.ncbi.nlm.nih.gov/pubmed/24614693
Conclusion: This study found a significant short-term, favorable effect on the percentage rise in PSA in men managed with Active Surveillance/Watchful

Waiting following ingestion of this well-tolerated, specific blend of concentrated foods. Its influence on decision-making suggests that this intervention is clinically meaningful, but further trials will evaluate longer term clinical effects, and other makers of disease progression.

WHEN IT COMES TO CONSIDERING DIET AND SUPPLEMENTS, here is startling information about the IMPORTANCE of diet and, particularly, supplement use:

Supplement use could save U.S. $24 billion

A report released this month by the Dietary Supplement Education Alliance (DSEA) concluded that the use of dietary supplements by specific American populations could result in a savings of at least 24 billion in health care costs over a five year period. The current report updates a similar report commissioned by DSEA in 2005 which estimated 5.6 billion dollars in savings over five years.

The report re-emphasizes that supplementing select groups with calcium and vitamin D, folic acid, omega-3 essential fatty acids (EFAs), and lutein with zeaxanthin could have a tremendous impact on health care expenditure. In the summary of the findings, the report states that the use of calcium and vitamin D by postmenopausal women could potentially avoid approximately 776,000 hospitalizations for hip fractures and a significant number of extended nursing facility stays for this group, resulting in a savings of 16.1 billion dollars.

If folic acid were used by the 44 million American women of childbearing age, 600 fewer infants would be born with neural tube defects, resulting in a savings of 1.4 billion dollars over five years. Omega-3 fatty acid supplementation in the amount of 1800 milligrams per day among those over the age of 65 would result in a 3.2 billion dollar savings, and avoidance of 374,301 hospitalizations over the next five years. And just 6 to 10 milligrams lutein with zeaxanthin per day is estimated to save $3.6 billion by preventing 190,927 individuals from losing their independence due to loss of central vision resulting from macular degeneration.

“Rapidly escalating health care costs in the U.S. have severe implications for our society as a whole,” DSEA president Jon Benninger stated. “This study provides valuable data that may lead to preventative health care solutions and address the

budgetary problems facing federal and state health insurance programs, corporate health cost managers and individual families."

According to the US Department of Health and Human Services and Department of Agriculture, "The Nutrition and Your Health: Dietary Guidelines for Americans acknowledges that some Americans may need a vitamin and/or mineral supplement to meet specific nutrient needs." In view of the potential savings for an overburdened health care system alone, not to mention the prevention of a significant amount of suffering and disability, the consistent use of nutritional supplements by at-risk groups could greatly benefit these populations, as well as our society as a whole.

MORE TO EXPLAIN VITAMIN D:

Understanding 1,25 dihydroxy Vitamin D and 25-hydroxy Vitamin D.

1,25 dihydroxy Vitamin D (range 15.9-55.6pg/mL) is increased in sarcoidosis and hyperparathyroidism. It may be elevated in cases of hypercalcemia associated with malignant lymphoma. It is decreased in rickets, type I vitamin D-resistant rickets, hypoparathyroidism, pseudohypoparathyroidism, and renal osteodystrophy and psoriasis. Because of the complex, multifactorial control of calcium balance, it is often useful to measure parathyroid hormone in conjunction with vitamin D. This is NOT the assay to determine vitamin D deficiency. The 1,25-dihydroxy Vitamin D assay should never be used for detecting Vitamin D deficiency because levels will be normal or even elevated as a result of secondary hyperparathyroidism. Rather, 25-hydroxy Vitamin D is the appropriate assay.

25-hydroxy Vitamin D (range 32-100ng/ml) deficiency leads to the mobilization of calcium from bone. Individuals with more severe vitamin D deficiency can develop osteomalacia and/or osteoporosis. Osteomalacia in children, also referred to as rickets, results in well described skeletal malformations since their bones are actively growing. Recent clinical and edpidemological studies suggest that vitamin D deficiency may play a role in several conditions related to bone including prostate cancer, breast cancer, colon cancer, heart disease, hypertension, multiple sclerosis, and type 1 diabetes. A number of studies have shown that vitamin D deficiency is very common, especially in certain high-risk populations. This situation has

occurred, in part, because the foods in the typical American diet are very low in vitamin D. Fatty fish, such as mackeral and salmon and fish liver oils, are some of the few natural dietary sources of vitamin D. Most people do not eat enough of these foods to maintain adequate vitamin D levels or do not spend enough time in the sun. In the United States, vitamin D is added to milk in order to prevent the occurrence of rickets in the pediatric population. Unfortunately, too many children do not drink enough milk to raise their vitamin D levels to the optimum range. Also, recent studies have shown that the level of vitamin D in fortified milk is frequently much lower than that recommended by the FDA. Human milk contains very little vitamin D because many mothers are deficient, so children of mothers who choose to breast-feed are at risk of developing rickets if they are not given supplemental vitamin D. The American Academy of Pediatrics recommends that infants who are exclusively breast-feeding should be given a supplement of vitamin D. Several factors are associated with an increased risk of developing vitamin D deficiency. At risk populations include:

- Individuals with low dietary vitamin D levels: Infants fed only mother's milk and children who do not drink fortified milk are at risk.

- Individuals with malabsorption syndromes: Patients with pancreatic enzyme deficiency, Crohn disease, cystic fibrosis, celiac disease, and surgical resection of stomach or intestines are at risk.

- Individuals with severe liver disease: Hepatic disease can reduce the conversion of vitamin D to 25-D and can lead to malabsorption of vitamin D.

- Individuals with kidney disease: Nephrotic syndrome can increase the urinary loss of vitamin D.

- Individuals taking certain drugs: Several medications, including phenytoin, phenobarbital, and rifampin accelerate the breakdown of vitamin D by the liver.

- Individuals who live at higher latitudes: Individuals who live in northern climates are at increased risk of deficiency, especially in winter months due to diminished exposure to UVB radiation.

- Individuals who spend little time outside: Individuals who are home-bound or simply choose to remain inside are at increased risk.

- Older adults: The skin becomes less efficient at producing vitamin D as one ages because of diminished levels of vitamin D precursors in the skin.

- Individuals with decreased sun exposure for cultural reasons. Women in some societies are required to cover themselves with heavy clothing, reducing exposure to the sun's rays.

- Races with high melanin levels: Increased skin pigmentation can reduce the efficiency of vitamin D conversion in the skin as much as 50-fold. Individuals with dark complexions living at higher latitudes are at increased risk.

Serum concentrations of 25-D are known to vary with age, sex, race, season, and geographic location. This has led to establish seasonal expected ranges for the geographic location and local population. This approach provides a "reference interval," but does not adequately determine health status with regard to vitamin D levels if a significant portion of the reference population is, in fact, deficient. A more useful parameter in clinical practice would be a nutritional threshold, below which an individual could be characterized as vitamin D deficient. Several investigators have approached this problem by assessing the correlation of plasma 25-D concentration with various biological markers. For example, plasma 25-D levels have been shown to have an inverse relationship to serum parathyroid hormone levels. Secondary hyperparathyroidism can be corrected with 25-D levels increased to >32ng/mL (80nmol/L). Serum concentrations <32ng/mL are associated with impaired insulin resistance and beta-cell function. Together these data suggest that 32ng/mL represents the appropriate threshold for identifying individuals with clinical vitamin D deficiency.

Interesting to note these remarks by John Cannell, M.D., of The Vitamin D Council:

"You see, the question is not "Should men with prostate cancer be treated with vitamin D?" The question is, "Should men with prostate cancer be allowed to die vitamin D deficient?" The evidence based medicine folks say they should. We say they shouldn't. All patients with prostate cancer should have their vitamin D deficiency aggressively and immediately corrected and that requires up to 4,000 units of cholecalciferol every day. Physicians, researchers, or scientists who say 4,000 units may be toxic are simply admitting their ignorance of current scientific literature.

Physicians who have read the recent scientific literature and who understand the physiology and pharmacology of cholecalciferol would be comfortable using up to 10,000 units of cholecalciferol a day while following the patient's PSA, urine and serum calcium, and 25(OH)D. Thanks to the Toronto group, scientific evidence now exists that suggests such an approach may help prostate cancer patients; only time will tell.

Many patients with prostate cancer are on the long hopeless road towards death. Not only may plain old vitamin D help men with prostate cancer, it is likely to give them back their hope. Physicians have many rights, but the right to take away hope is not among them."

Medical Oncologist Charles "Snuffy" Myers provides this information regarding appropriate Vitamin D3 level:

"We use a broad goal of 50-100ng/ml. Most of what has been reported as Vitamin D toxicity is really toxicity from excessive calcium intake. From what I have seen, 25-hydroxyvitamin D appears to be very safe by itself. Clearly the literature is evolving rapidly and the direction is toward higher levels being also safe. In certain settings, hypercalcemia is quite unlikely. For example, in men on Zometa, it is hard to keep the calcium in the normal range - it all to easily slips into an abnormally low range, triggering hyperparathyroidism."

Note that Dr. Myers specifically remarks that the Vitamin D3 level should be within a "broad range" of 50-100ng/ml. That's his "broad range" spread. He assigns his patients specific goals, and for most that goal is in the 65ng/ml-75ng/ml range with total Vitamin D3 intake of up to 10,000 IU daily to reach that range. Increased Vitamin D3 intake should be accompanied by regular monitoring of blood serum 25-hydroxy Vitamin D, blood serum and urine calcium levels, and parathyroid hormone level.

AND THIS FROM JOHNS HOPKINS:

Can Vitamin D Prevent Prostate Cancer?

If you thought vitamin D's main role was preventing rickets and strengthening bone, think again. Many researchers now believe that the "sunshine vitamin" may one day play a key role in preventing the growth of prostate cancer, and in killing rogue prostate cancer cells that have escaped into the body. The data are quite suggestive and vitamin D is a most promising area for prostate cancer research.

During the past decade, there's been a surge in research into the association between vitamin D and prostate cancer. Multiple studies have reported a link between sub-optimal levels of vitamin D and an increased risk of developing various cancers including prostate cancer, although not all studies have been

confirmatory. While these findings are encouraging and could eventually lead to widespread screening for and treatment of vitamin D deficiencies, we still need a large, randomized, placebo-controlled trial to demonstrate whether vitamin D supplementation can actually prevent prostate cancer.

Vitamin D was first isolated by Adolf Windaus, who was awarded the Nobel Prize in 1928 for his work. Vitamin D is not actually a vitamin; it's a hormone. A vitamin is a substance you have to get from food. Vitamin D, however, is manufactured in the body -- the definition of a hormone. While researchers are still working to determine the effects of vitamin D on the prostate, here are some of the heart benefits of this vitamin:

- **Blood pressure regulation.** While there is no direct evidence that vitamin D supplementation will lower blood pressure, people with high blood pressure generally have low blood levels of vitamin D.
- **Heart attack, stroke, heart failure reduction.** A recent study in Circulation reported that events such as heart attacks, strokes, and heart failure were anywhere from 53% to 80% higher in people with low levels of vitamin D in their blood. That risk increased even more in people with high blood pressure.

  Low blood levels of vitamin D may increase the risk of heart disease and stroke, especially for people with high blood pressure, according to researchers with the Framingham Heart Study. The scientists followed 1,739 men and women for more than five years and reported that participants with low blood levels of vitamin D were 62% more likely to develop cardiovascular disease than those with higher levels. For those with low vitamin D levels and high blood pressure, cardiovascular risk doubled.

- **Helps reduce inflammation.** Researchers speculate that more vitamin D could lead to less inflammation in the arteries. Until recently, most researchers believed that heart disease was essentially a "plumbing" problem caused by an accumulation of hardened fat and cholesterol in the coronary arteries, known as plaque. However, an increasing body of evidence now shows that this accumulation of plaque is actually the result of chronic, low-grade inflammation in the coronary arteries. Researchers also believe that in the battle against heart disease, damping down this inflammation is nearly as important as lowering cholesterol.

And this paper reports that Oregano may play a role in causing prostate cancer cell apoptosis: http://www.sciencedaily.com/releases/2012/04/120424162224.htm