

## It Takes More Than Vitamin D Supplementation to Help Your Patients Optimize Their Defense Against Cancer

James P. Meschino, DC, MS

In recent days, many of your patients have been exposed to media reports regarding a vitamin D study in the *American Journal of Clinical Nutrition*, showing that adults who were given vitamin D supplements at dosages of 1,000 IU per day experienced a 50 percent to 60 percent reduction in cancer incidence compared to those who were not administered vitamin D supplements. These findings should not be surprising, as many previous studies have shown that vitamin D exhibits a number of anti-cancer properties and has been successfully used in other recent trials to slow the progression of prostate cancer.

Vitamin D encourages cells to fully mature (cellular differentiation) during their growth cycle and to replicate more slowly. These are biological influences that are known to reduce the likelihood that a cell will become cancerous within the body. The question really has centered on how much vitamin D is required to maintain the maximum preventive benefit. What is becoming increasingly obvious is that acquiring vitamin D from food alone is not sufficient; especially for individuals living above the 40<sup>th</sup> degree latitude in North America. (The 40<sup>th</sup> degree latitude essentially divides the United States in half with respect to the north and south regions.)

A number of recent studies strongly suggest adults should ingest 800-1,000 IU of vitamin D per day (to achieve a fasting blood level of at least 85 nmol/L of 25-hydroxycholecalciferol), as a means to lower overall cancer risk. For a number of years, higher blood levels of vitamin D have been associated with a reduced risk of colon, breast and prostate cancers. The most recent study in the *American Journal of Clinical Nutrition* indicates that vitamin D's protective influences extend to other cancers as well.

It should be noted that vitamin D supplementation at a daily dosage of 800-1,000 IU per day also helps prevent osteoporosis and might decrease the risk of multiple sclerosis. However, individuals suffering from sarcoidosis or hyperparathyroidism should refrain from taking high doses of vitamin D, due to potential side effects. This also is true for pregnant and breast-feeding women. Of course, individuals who have received an organ transplant or have severe kidney disease must also receive approval from their attending specialist before proceeding with any supplementation regimen.

In general, however, most adults likely would reduce their risk of cancer through the practice of vitamin D supplementation in the range of 800-1,000 IU per day, or by raising their blood levels of vitamin D to at least 85 nmol/L (and no higher than 200 nmol/L to avoid vitamin D toxicity) via the combination of foods containing vitamin D (e.g., fish, vitamin D-fortified dairy products), ultraviolet light exposure (as 7-dehydrocholesterol in the skin is converted into cholecalciferol upon exposure to ultraviolet light) and vitamin D supplementation.

However, it takes more than a vitamin D supplement recommendation to help your patients maximize their defense against cancer. A number of other supplement ingredients also provide

important additional anti-cancer benefits, as outlined below.

## Calcium

The calcium your body does not absorb into the bloodstream (about 60 percent to 70 percent of your intake level) remains in the intestinal tract and provides important prevention against colon cancer in its travels through the large intestine. Calcium binds to bile acids in the intestinal tract, preventing their conversion into cancer-causing substances known as secondary sterols (e.g., lithocholic acid and deoxycholic acid). Calcium also works with vitamin D to slow the rate of cell division of colon cancer cells. Both of these effects have been shown to reduce colon cancer. In the largest study published to date, Peters and fellow researchers showed that individuals who ingested calcium supplements at a minimum of 1,200 mg per day had a 27 percent reduction in risk of developing colon cancer, compared to nonusers of calcium supplements.

## Folic Acid and Vitamin B<sub>12</sub>

Folic acid and vitamin B<sub>12</sub> are necessary to provide the body with an ingredient (a methyl group) that is necessary for DNA replication, as cells replace themselves from one generation to the next. Studies show that insufficient folic acid and/or vitamin B<sub>12</sub> status allow DNA to become hypo-methylated, which makes them weak, fragile and susceptible to cancerous mutations. The Health Professional Follow-Up Study and the Nurses' Health Study have shown that insufficient intake of folic acid increases risk of colon and breast cancer under certain conditions. Insufficient folic acid and vitamin B<sub>12</sub> intake are also factors in cervical dysplasia and cervical cancer in women. Overall, studies support daily supplementation with 400 mcg of folic acid and 50 mcg of vitamin B<sub>12</sub>. These levels keep DNA methylated, strong and more resistant to the influence of cancer-causing agents.

## Antioxidants Supplementation

Antioxidants such as vitamin C, selenium, lycopene, beta-carotene, vitamin A, lutein, and vitamin E help to reduce cancer risk by quenching free radicals, which are unstable compounds that damage DNA and cause cancerous mutations. Vitamin C has been shown to be especially helpful in protecting the esophagus, stomach, pancreas, cervix and colon, whereas vitamin E protects the mouth, cervix, prostate and colon. Together, vitamin C and vitamin E supplementation have been shown to reduce the concentrations of cancer-causing agents (fecal mutagens) in the colon and rectum and block the formation of cancer causing nitrosamines within the stomach and intestinal tract. Selenium supplementation is strongly linked to prevention of prostate and colon cancer. Lycopene is acclaimed for its ability to reduce prostate cancer, but it also appears to be important in the prevention of cervical cancer and skin cancer.

Vitamin C, vitamin E and selenium also are important in the prevention of skin cancer according to animal studies. Beta-carotene supplementation has been shown to reverse a precancerous condition in the mouth known as leukoplakia, as well as early-to-moderate stage cervical dysplasia (a precancerous condition of the cervix). Vitamin A protects much of the interior lining of the body surfaces and has been used to reverse a number of precancerous conditions. Although lutein is not linked to cancer prevention yet, it is vital to the prevention of macular degeneration, which is the leading cause of blindness in people over the age of 55.

For all of these reasons, the daily antioxidant cocktail you should consider for disease-prevention purposes is as follows:

- Vitamin A: 2,500-3,000 IU (anything higher can cause liver damage over time)
- Beta-carotene: 10,000-20,000 IU

- Vitamin C: 1,000 mg
- Vitamin E: 400 IU (all-natural)
- Selenium: 100-200 mcg
- Lycopene powder: 5 mg
- Lutein powder: 5 mg

## Omega-3 Fats

Omega-3 fats from fish, fish oil and flaxseed oil are converted by your body tissues into a cancer-fighting hormone (prostaglandin series-3), which slows the rate of cell division within our tissues. As mentioned above, when you slow the rate of cell division, you reduce the chances of cancerous changes occurring in the cells of the body. This point has been illustrated many times in studies showing that women and men with higher tissue levels of omega-3 experience significantly lower subsequent breast and prostate cancer incidence in follow-up studies. The same appears to be true for colon cancer as well, according to some preliminary findings. Most people do not ingest the amount of EPA (eicosapentaenoic acid) and DHA (docosahexaenoic acid) that experts recommend to reduce risk of heart disease, optimize brain development, reduce dementia and Alzheimer's disease risk, and help prevent cancer.

Unfortunately, fish supplies are running low and many fish now contain high levels of mercury, with experts warning us not to consume more than two servings of fish per week. Moreover, the essential fat in borage seed oil (GLA) has been shown to work with omega-3 fats to block the production of inflammatory agents that are linked to inflammation and cancer.

To optimize your intake of omega-3 fats (EPA, DHA and ALA) and GLA, it is highly advisable to take three capsules per day of a supplement containing 400 mg each of fish oil, flaxseed oil and borage seed oil. This combination not only helps to optimize disease prevention, but also promotes the formation of skin hormones that make the texture of your skin smoother and softer, and slows certain aspects of aging.

In conclusion, I suggest that health practitioners alert their adult patients to the information provided in this review as an important aspect of comprehensive wellness management. Health practitioners should point out to patients that the dosages recommended in this article can easily be obtained on a daily basis by using three basic foundation supplements:

- a well-formulated high-potency multivitamin;
- a calcium/vitamin D supplement; and
- an essential fatty acid supplement.

AUGUST 2007