

# the LONGEVITY KRONICLE

Volume 10, Issue 1

## Vitamin D *and your* Health

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Been out in the sun lately? If so, you've just given your body a dose of something so valuable, so extraordinary in human health that it is being viewed as somewhat of a "holy grail" of health and healthy aging. We're talking, of course, about vitamin D, which your skin synthesizes from ultraviolet light and which is available in few foods, mostly fatty fish like salmon. It also helps your body absorb calcium and phosphorus.

People of a certain age might know vitamin D best as the nutrient essential for healthy bone growth. It's why your mother forced you to swallow a tablespoon of cod liver oil every day—the oil was rich in the vitamin, providing important protection against a crippling bone disease called rickets. Because it is nearly impossible to get sufficient quantities of vitamin D from food, beginning in the 1930s milk and other foods were fortified with the vitamin. The result? Rickets nearly disappeared and everyone pretty much ignored the vitamin for decades.

Not anymore.

*continued on page 3*

### In *the* News

Here are some longevity-related headlines from the past few months.

Adding years to your life. If you're 50, smoke, have high blood pressure and high cholesterol, you've got about another 23 years to live. But if you stop smoking and lower your blood pressure and cholesterol, you might get an extra 10 to 15 years of life.

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## Letter *from the* Editor

It has been my pleasure to edit the Longevity Kronicle over the years. However, it was time for a new look and a few changes. The new Longevity Kronicle—A Guide To Your Personal Health will continue to provide topics that can improve our readers' quality of life, while addressing health and aging related issues. It will bring you the most current longevity-related issues as they are published in medical journals around the world. The articles will focus on our research areas, which are:

- **Oxidative stress** – The ongoing damage to cellular components from oxygen free radicals.
- **Insulin resistance** – Aging is characterized by a trend of increased blood glucose (sugar) and a simultaneous decrease in circulating levels of insulin.
- **Inflammation** – It occurs in several organs such as joints (arthritis), bone (contributes to osteoporosis), blood vessels (plays a role in atherosclerosis—hardening of arteries), and may be a factor in muscle loss as we age.

In these areas we will address the effect or impact of nutrition, physical activity, hormone balance, cognitive function, and preventative medicine as it relates to aging.

I hope that you find the new Longevity Kronicle—A Guide To Your Personal Health educational and beneficial.

In January 2010, please plan to join KLRI for our on-line forums. There will be more information about the forums as the year grows closer. Also, if you would like to learn more about KLRI and to view the listing of our Board of Directors, Scientific Advisory Board, and staff, please visit our website at [www.kronosinstitute.org](http://www.kronosinstitute.org).



Patricia A. Crenshaw  
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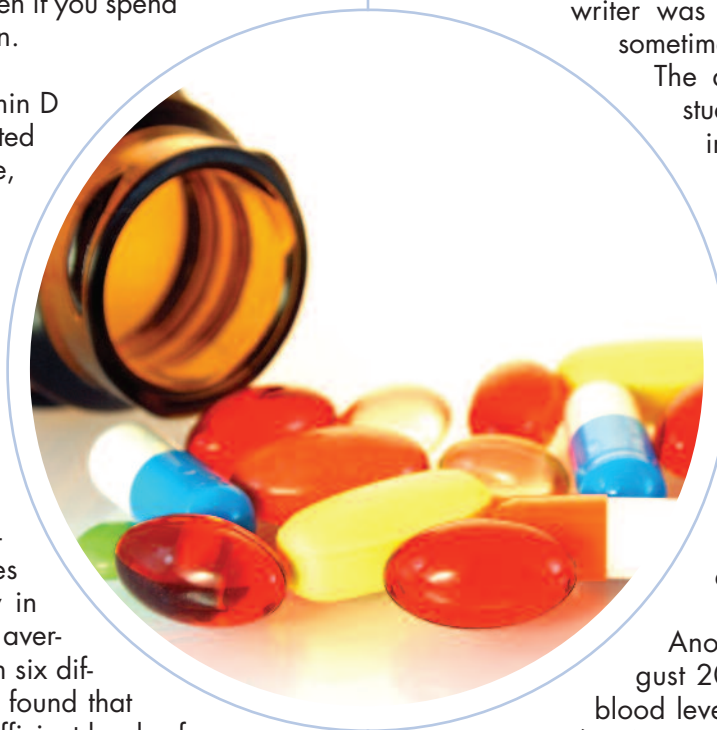
## Vitamin D *and your Health*, continued

Today, vitamin D is one of the most studied vitamins in all of human nutrition. It is being linked to nearly every human disease, from cancer to high blood pressure to dementia, diabetes, and depression. Nearly every cell researchers examine, even sperm cells, turn out to have receptors for vitamin D, meaning they need adequate amounts to function properly.<sup>1, 2</sup>

One thing hasn't changed, however. While you can certainly get enough vitamin D from fortified foods and sunlight to prevent rickets, the likelihood that you can get enough to reduce your risk of other D-related health conditions is slim, even if you spend considerable time in the sun.

For, as one of the top vitamin D researchers in the world noted in a recent journal article, "rickets can be considered the tip of the vitamin D-deficiency iceberg."<sup>3</sup>

In fact, it's estimated that between 50 and 60 percent of older people throughout the world do not get enough vitamin D, in part because the skin's ability to synthesize the vitamin from sunlight fades with age.<sup>4</sup> A recent study in nearly 6,000 men with an average age of 73 who lived in six different areas of the country found that 72 percent did not have sufficient levels of vitamin D, and one-fourth had dangerously low levels.<sup>5</sup> Even healthy Hawaiian surfers and Saudi Arabia residents turn up with low levels, likely because of the clothing and sunscreen they apply to protect themselves from the sun's cancer-causing rays.<sup>6</sup> Unfortunately, it is exactly those same rays that are needed for vitamin D production.



Forget about getting enough in your diet; in the study of older men described above, only 10 out of nearly 6,000 got adequate amounts from diet alone.

And if you aren't getting enough vitamin D, then you may be unknowingly increasing your risk of age-related diseases and shaving years off your life.

### Vitamin D and Longevity

How's this for a shocking headline: "Lack of Vitamin D Raises Death Risk." You might think the headline writer was overstating things (as they sometimes do), but you'd be wrong. The article reported on a large study of 3,258 men and women in Germany with an average age of 62, most of whom had heart disease. Researchers checked participants' vitamin D blood levels every month for eight years, finding that those with lowest levels of vitamin D (even those who didn't have heart disease) were nearly twice as likely to die during that time as those with the highest levels.<sup>7</sup>

Another study published in August 2009 found that women with blood levels of vitamin D below 15.3 ng/mL (nanogram per milliliter) were 1.5 times more likely to die than women with levels higher than 27 ng/mL.<sup>8</sup>

Now, the low levels of vitamin D didn't kill these people. However, those low levels may have made them more susceptible to the conditions that did kill them. Take the group with heart disease discussed earlier,

for instance. We now know that low levels of vitamin D contributes to thicker blood that is more likely to clot, increases inflammation and cholesterol, and inhibits smooth muscle cell reproduction (like those in arteries) and the ability of artery walls to repair themselves.<sup>9-12</sup>

Low levels of vitamin D have also been linked to an increased risk of stroke, diabetes, congestive heart failure, and hypertension.

Conversely, increasing vitamin D levels with supplements or UVB light may lower blood pressure. One small study examining the effect of vitamin D supplementation on blood pressure found that exposing 18 people with hypertension to ultraviolet B light 10 minutes at a time, three times a week for three months not only increased vitamin D levels about 180 percent, but brought their blood pressure down to normal.<sup>13</sup>

In another study, 148 women with low vitamin D blood levels received either 1200 mg of calcium plus 800 IU of vitamin D or calcium alone. After eight weeks, the women receiving both supplements had an average decline in systolic blood pressure (the first number) of 9.3 percent, with 81 percent experiencing a systolic blood pressure drop of 5 mm Hg or more, a huge difference when it comes to cardiovascular and stroke risk.<sup>14</sup>

But cardiovascular disease is not the only aging-related condition in which vitamin D stars.

## Vitamin D and Your Health

We could easily write a book on the benefits of vitamin D, but we don't have room in this newsletter for that. So here, in the proverbial nutshell, are just some of the highlights.

**Bone.** The evidence for vitamin D on bone growth and strength began, of course, with rickets. Today, however, we know that low levels also play a major role in osteoporosis. In fact, even if you're taking prescription medication for osteoporosis, you should still take vitamin D and calcium supplements. The benefits seem to extend no matter what your age. In one study, researchers gave 45 nursing home residents a piece of bread fortified with 5,000 IU of vitamin D and 325 milligrams of calcium. The residents had no ill effects from the added nutrients, most obtained blood levels of vitamin D well within the optimal range, and, most exciting, most also experienced some improvement in their bone density.<sup>15</sup>

Strong bone is one thing; avoiding hip-breaking falls that can send you into a nursing home and hasten your death is another. Enter vitamin D. A German study published in early 2009 showed that after 20 months of supplementing with 1,000 mg of calcium and 800 IU of vitamin D, elderly men and women living on their own reduced their risk of falls 39 percent more than those who only supplemented with calcium. The supplementing group also had significantly greater muscle strength than the calcium-only group, an important component in preventing falls.<sup>16</sup>



**Cancer.** The studies on vitamin D and cancer risk are enough to compel you to buy stock in the vitamin tomorrow. One study found that increasing blood levels just 10 ng/mL reduced the risk of dying of cancer by 24 percent and the risk of cancer overall by 35 percent.<sup>17, 18</sup> Similar findings appear in at least two studies in which women were randomly assigned to receive either 1,100 IU of vitamin D<sub>3</sub> plus calcium or placebo.<sup>19, 20</sup> One analysis predicted that raising the minimum blood level of vitamin D year round to 40 to 60 ng/mL would prevent about 58,000 new cases of breast cancer and 49,000 new cases of colorectal cancer each year, as well as 75 percent of deaths from these diseases in the United States and Canada.<sup>21</sup> The evidence is so compelling, that in June 2009 the Canadian Cancer Society recommended that every adult supplement with 1,000 IU of vitamin D during the fall and winter, year round if they were older, had dark skin, didn't go outside often, or wore clothing that covered most of their skin.<sup>22</sup>

**Cognition.** Cognition—memory, ability to learn and think through complex issues—also appears to be impacted by vitamin D levels. In a study published this summer, European researchers found that in men ages 40 to 79 years old, those with the lowest levels of vitamin D in their blood scored lowest on a test of cognition, while those with the greatest levels scored highest.<sup>23</sup>

**Immunity.** Vitamin D appears to be important in a properly working immune system. Low levels have been linked with autoimmune diseases such as multiple sclerosis, likely because the vitamin helps control inflammation. That's also the mechanism likely responsible for the finding that people over 50 with adequate blood levels of vitamin D are less likely to develop periodontal (gum) disease.<sup>24</sup> Given linkages between gum disease and heart disease, preventing this pro-inflammatory condition is critical. Even colds and flu are more prevalent when vitamin D levels are low. In fact, researchers suspect that one reason upper respiratory infections are more likely in winter is because most people's D levels fall as the days shorten.<sup>25</sup>

**Insulin resistance.** Insulin resistance occurs when cells are no longer fully receptive to insulin, the hormone that "unlocks" a cell so glucose can get in and provide the fuel for energy. If the cell won't open to glucose, it builds up in your blood causing organ damage and increasing the risk of diabetes. Insulin resistance is now recognized as one of the most important biomarkers of aging. However, numerous studies suggest that people with high blood levels of vitamin D are much less likely to develop insulin resistance and its cousin, type 2 diabetes.<sup>26-29</sup>

**Muscle.** One of the greatest contributors to poor aging is the loss of skeletal muscle. It contributes to the frailty seen in so many older people, a weakness that prevents physical activity, interferes with independent living, and hastens death. But vitamin D, because of its role in maintaining skeletal muscle, may prevent or, at the very least, delay such weakness while at the same time improving physical activity.<sup>30</sup>

**Weight.** Want to lose a few pounds while simultaneously improving your risk of heart disease? Get extra help with vitamin D supplements. Several studies find links between low vitamin D levels and obesity, likely because of its effects on glucose metabolism.<sup>31-33</sup> A recent study found that the higher the vitamin D levels at the beginning of a weight loss plan, the more weight participants lost.<sup>34</sup> Even better? Higher vitamin levels predicted greater loss of abdominal fat, toxic fat most closely linked to conditions like heart disease and diabetes.<sup>31-33</sup> Other studies find that supplementing with vitamin D and calcium can slow postmenopausal weight gain in women who don't get enough calcium.<sup>35</sup>



Overall, the benefits of vitamin D supplementation appear so significant, that one researcher estimated western European countries could save about \$274 million a year in medical costs if everyone received additional D.<sup>36</sup>

## How Much is Enough?

To reap the health benefits of vitamin D, experts recommend vitamin D blood levels of at least 30 ng/ml, an amount twice as high as that recommended just 10 years ago.<sup>37</sup>

Current recommendations call for dietary intake of 200 IU a day for adults to age 50, then 600 IU for those 71 and older.<sup>38</sup> Most experts, however, say those recommendations are too low. Many suggest 800 and 1,000 IU a day, higher if you take medications that can interfere with D absorption such as bile acid sequestrants used to reduce cholesterol, anticonvulsant medications, and cimetidine (Tagamet). One study predicted that adult men need between 3,000 and 5,000 IU a day.<sup>39</sup>

The panel that sets recommended dietary guidelines will likely recommend higher levels for adults soon.<sup>2</sup> Members will probably also change the safe upper limit amount, currently set at 2000 IU/day. Published reports suggest that high levels of vitamin D are safe up to 10,000 IU/day, possibly higher.<sup>40, 41</sup>

Don't take massive doses of vitamin D without first checking with your doctor, however. It could be dangerous in people with kidney disease or certain other conditions such as high calcium levels, atherosclerosis, or sarcoidosis.

The best way to know if you need to supplement with vitamin D—and how much you might need—is with a

blood test. In fact, tests ordered to determine vitamin D levels in patients soared 75 to 90 percent in the nation's largest diagnostic labs in the past couple of years.<sup>42</sup> If your doctor does order the test, make sure it measures levels of 25(OH)D<sub>3</sub>, not its cousin, 1,25(OH)<sub>2</sub>.

The former is the type your body makes from sunlight; the latter, also called D<sub>2</sub>, is the type found in plant sources and used to supplement milk and other foods. However, D<sub>3</sub> is much more potent than D<sub>2</sub> and much more important in disease prevention. That's also why it's worth reading labels when choosing a vitamin D supplement. Look for supplements that contain D<sub>3</sub>, also called cholecalciferol, instead of D<sub>2</sub> (or ergocalciferol), and those with little-to-no vitamin A, which can quickly build up to toxic levels in your body.

Also make sure your doctor considers your weight when determining how much supplemental vitamin D you might need. It's clear that higher body weight requires greater amounts of vitamin D to bring blood levels up to par, likely because the vitamin is stored in fat cells.<sup>43</sup>

Another option for increasing your D levels is with a "daylight" lamp that produces UVB radiation.<sup>44</sup> Of course, it doesn't hurt to up your consumption of foods rich in vitamin D, such as salmon. Just choose wild-caught salmon, not farmed salmon. The wild fish provides 75 to 90 percent more of the vitamin.<sup>45</sup>

No matter how you choose to do it, it's clear that for most people, a bit more vitamin D each day can go a long way towards improving their health and extending their life.

References available upon request.

## In *the News*, continued

This finding comes from British researchers who have been tracking 19,000 male civil servants for nearly 40 years, and was published in the October issue of the *British Medical Journal*.<sup>46</sup>

**Pain ages you.** Middle-aged people with chronic pain have disability levels similar to people in their 70s and 80s who didn't have chronic pain, report researchers from the University of California, San Francisco in the *Journal of the American Geriatric Association*. The message? Get your pain treated or face a downward spiral of reduced physical function that can prematurely age you 20 or 30 years.<sup>47</sup>

**Fruits, vegetables and cognition.** Yet another reason to up your fruit and vegetable consumption: a study published in the August issue of the *Journal of Alzheimer's Disease* found people with the highest intake of fruits and vegetables in their diet (about 14 ounces) had higher levels of antioxidants, less free radical damage, and scored better on cognition tests than those who ate less. As one researcher noted in a press release on the study: "[High fruit and vegetable intake] may increase our chances to remain free of dementia in advanced age."<sup>48</sup>

**White tea and aging.** While green tea seems to get all the press, a new study published in *BMC Complementary and Alternative Medicine* in August found that white tea also contains high amounts of anti-aging antioxidants capable of reducing the risk of cancer, rheumatoid arthritis and even wrinkles. Turns out the antioxidants in the tea protect elastin and collagen, proteins important in healthy skin and other organs, by reducing inflammation.<sup>49</sup>

**Weight and aging.** As if you needed another reason to shed a few pounds, now comes news from British researchers that every 2.2 pounds middle-aged women gain since age 18 reduces the likelihood that they will live a healthy old age by 5 percent. If the

women were already overweight when they were 18 and didn't lose the weight, they were 79 percent less likely to reach their senior years without developing a chronic disease than women who maintained a healthy weight. The definition of a "healthy old age"? Reaching age 70 without chronic disease or major cognitive or physical impairments.<sup>50</sup>

**Time to lace on your walking shoes.** It's never too late to begin exercising. A study published in the September 14 edition of the *Archives of Internal Medicine* found that even those who first begin exercising between ages 70 and 85 are less likely to die over the next four to eight years, more likely to remain independent, and report less loneliness and poor health than their couch-potato peers. You don't have to train for a marathon; just four hours or more a week can convey enormous benefits, researchers found.<sup>51</sup>

References available upon request.



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