We are attracted to the sun because it feels good. Humans have experienced the sun’s relaxing effects for eons, and now science has confirmed that sun exposure causes us to make substances in the brain and in the skin that make us feel good: endorphins, serotonin and dopamine. Maybe this is nature’s way of ensuring that we get out in the sun to partake of its amazing health benefits.

The sun’s biggest benefit to our personal health is what happens when its rays hit our skin and start the chain of biological reactions that create vitamin D—the so-called “sunshine vitamin.” For decades, science has known that vitamin D prevents thin, soft, misshapen bones—rickets in children and osteomalacia in adults—via its role in calcium, phosphorous and bone metabolism. Research in recent years has shown that low vitamin D levels are also associated with fibromyalgia, osteoarthritis, and, of course, osteoporosis.

Thanks to a surge of research on vitamin D in the past decade, it’s now apparent that the benefits of vitamin D extend far beyond bone health: low levels of vitamin D can increase susceptibility to infections (influenza, tuberculosis) and are linked to autoimmune diseases (multiple sclerosis, inflammatory bowel diseases, type 1 and 2 diabetes, rheumatoid arthritis), mental illnesses (seasonal affective disorder, schizophrenia), periodontal disease, cancer (at least colon, breast, lung and prostate), heart disease and even obesity.

Premier vitamin D researcher Michael Holick M.D., Ph.D.,
published a review of the many health problems associated with vitamin D deficiency in the July 19, 2007, issue of the *New England Journal of Medicine*. To be clear, researchers aren’t claiming that vitamin D deficiency is the only cause of these diseases, or that you won’t get them if you have optimal vitamin D levels. Much more research is needed to fully answer these questions. However, there is more than enough research on the benefits of vitamin D to know that it’s in our best interest to be sure we have adequate amounts.

Vitamin D’s powerful effects on health are related in part to the fact that it is technically not a vitamin, but actually more closely resembles a steroidal hormone. Following sun exposure of the skin, several biochemical conversions in the body result in the formation of calcitriol, the active form of vitamin D that is now known to affect the expression of more than 1,000 genes. That’s huge! Vitamin D is directing our biochemistry at the most fundamental levels, and many of us aren’t getting enough of it.

To understand the factors that contribute to low levels of vitamin D, first know that of the two ultraviolet (UV) forms of radiation that reach our skin—UVA and UVB—it’s UVB that produces vitamin D. Ninety percent of our body’s vitamin D supply is made by UVB’s action on the skin.

**RISK FACTORS FOR VITAMIN D DEFICIENCY INCLUDE**

- **Race:** The darker your skin, the longer it takes to make vitamin D from sunlight.
- **Age:** The ability to make vitamin D from sunlight diminishes four-fold from age 20 to age 70.
- **Lifestyle:** Modern humans across the globe spend much more time indoors during daylight hours, avoiding UVB producing vitamin D. Only about five percent of UVB will penetrate ordinary window glass.
- **Geographic location:** The further north you live, the less UVB radiation is available. At Asheville, NC, at 35.600N latitude, it’s very difficult to get any appreciable UVB from November to February. Clouds, smog and ozone in densely populated cities, like Atlanta, can also block UVB.
- **Culture:** Skin cancer concerns keep people out of the sun, and using a sunscreen of just SPF 8 blocks out 97.5 percent of UVB.

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Independent of UVB exposure, the following medical conditions can cause vitamin D deficiency: fat malabsorption syndromes (Crohn’s disease, cystic fibrosis, gastric bypass), kidney failure, significantly impaired liver function, and seizure disorders (not directly from the seizures but from long-term use of medications to treat seizures, such as phenobarbital and phenytoin).

Okay, now for the controversy: how to get adequate amounts of vitamin D? The American Academy of Dermatology warns us, “Get vitamin D safely through a healthy diet that may include vitamin supplements. Don’t seek the sun.”

Vitamin D experts believe that all of us over the age of one should get at least 1,000 IU a day of vitamin D. If we get it from a vitamin supplement, the D3 form is recommended, but not to exceed more than 2,000 IU a day without medical supervision.

The best food sources of vitamin D are fatty fish, such as salmon and mackerel; about 10 ounces of these fish a day would provide around 1,000 IU of vitamin D. Even though there are vitamin D fortified-foods, of which the most common is milk with 100 IU per cup, it’s difficult to get adequate amounts from foods because of the large quantities required. Additionally, some people are unable to absorb dietary sources of vitamin D in amounts adequate to rely on dietary sources to prevent deficiency.

A growing number of vitamin D-learned physicians are breaking from conventional orthodoxy warning against all sun exposure. They believe the health benefits from sensible, non-burning sun exposure greatly outweigh the health risks of skin cancer. They even point to research that indicates that non-burning sun exposure does not cause the most lethal from of skin cancer, malignant melanoma, and even might protect against it. To further put the risk/benefit in perspective, consider a statement from Harvard cancer researcher Dr. Edward Giovannucci in Harvard Magazine that an
A growing number of vitamin D-learned physicians are breaking from conventional orthodoxy warning against all sun exposure.

If you choose to get your vitamin D from the sun, the optimal length of sunscreen-free exposure will depend on your geographic location, age, skin pigment, time of day/year, nutritional status, history of sun damaged skin or skin cancer, and weather conditions. Check the sun calculator at www.vitamindcure.com for more guidance. In general, under the summer sun just when your skin is turning pink, which may be after only five minutes upwards of 15 minutes, your skin has made 10,000 to 50,000 IU of vitamin D3. After this, get in the shade, put on protective clothing, or use a UVA/UVB sunscreen to prevent more sun exposure. People who should altogether avoid vitamin D unless under medical supervision, whether from supplements or from the sun, include those with sarcoidosis, tuberculosis, or lymphoma. Those taking any prescription medications should check with their doctor or pharmacist regarding any potential photosensitivity reactions to the sun.

Note from the medical editor: As with any emerging health and nutritional information, not all physicians interpret and implement this new data on vitamin D the same way in their clinical practice. Readers are advised to educate themselves on this topic and consult with their physicians to determine the best course of action for their particular situation.

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