



## ON CALL

### Vitamin D<sub>2</sub> or D<sub>3</sub>?

**Q** After reading your article on multivitamins, I've decided to switch from my old multivitamin to plain vitamin D. But I'm confused by the various types of vitamin D. Which kind should I take?

**A** You are wise to take vitamin D, but even wise men are likely to be confused by the complexities of vitamin D.

Vitamin D is essential for health. Its most well-established role is to increase the intestinal absorption of calcium, keeping bones strong. But important research also raises the hope that vitamin D may help protect against prostate cancer and other malignancies, muscular weakness and falling, heart disease, and other disorders (see *Harvard Men's Health Watch*, February 2007).

Vitamin D is the only one of the 13 vitamins that can be made by the human body. (Small amounts of vitamin K are produced by intestinal bacteria.) The process starts when the ultraviolet energy in sunlight acts on a form of cholesterol (*7-dehydrocholesterol*) in the skin. The result is vitamin D<sub>3</sub>. But before D<sub>3</sub> can function, it must travel to the liver and then the kidneys to undergo further conversions. The end product is active vitamin D, known technically as *1,25-dihydroxyvitamin D*, or *calcitriol*.

Many Americans are deficient in vitamin D because they don't get enough sunlight to make vitamin D<sub>3</sub> in the skin. That's not all bad, since excessive sun exposure leads to premature wrinkling and skin aging as well as malignant melanomas and other skin cancers.

A good diet will provide adequate amounts of all the vitamins except D. Fish and shellfish provide some vitamin D (oily fish are best). And egg yolks have a tiny amount. Fortified dairy products have added vitamin D—but very few of us get the D we need from diet. That's no surprise when you realize that you need to consume about 5 ounces of salmon, 7 ounces of halibut, two 8-ounce cans of tuna, or a quart of milk to get 400 international units (IU) of vitamin D, which is only about half of what many experts recommend.

If you don't get enough sunlight to make the vitamin D you need, and your diet can't make up the rest, you need a supplement. Two forms are widely available. Vitamin D<sub>2</sub> is produced by exposing *ergosterol* from yeast to ultraviolet light, while D<sub>3</sub> can be obtained from fish or by exposing lanolin from sheep's wool to ultraviolet rays.

Both D<sub>2</sub> and D<sub>3</sub> have to pass through your liver and kidneys to be converted to the active form of vitamin D. But which is best? Vitamin D<sub>2</sub> has been the mainstay of therapy for over 80 years and is the only form in prescription preparations. But both D<sub>2</sub> and D<sub>3</sub> are available as over-the-counter supplements.

A 2004 study suggested that D<sub>3</sub> was better, but it tested only a single 50,000 IU megadose of each preparation. A more realistic 2008 trial evaluated a 1,000 IU daily dose of D<sub>2</sub> or D<sub>3</sub>, a supplement that combined 500 IU of each, and a placebo. The subjects were 68 healthy adults age 18 to 84. Interestingly, 60% of them were vitamin-D deficient at the start of the trial. At the end of 11 weeks, though, D<sub>2</sub> and D<sub>3</sub> were equally effective at boosting blood levels of D.

Pick whichever form of D is easier to find, but be sure to get enough. The Recommended Dietary Allowance (RDA) for adults younger than 51 is 200 IU, for 51- to 70-year-olds it's 400 IU, and for people over 70, it's 600 IU. But many experts recommend 800 to 1,000 IU a day. Doses up to at least 2,000 IU a day are considered safe.

All in all, the choice between D<sub>2</sub> and D<sub>3</sub> is less important than getting the right "D" dose.

HBS



Harvey B. Simon, M.D.  
Editor, *Harvard Men's Health Watch*

Send us a question for On call

By mail | Dr. Harvey B. Simon  
*Harvard Men's Health Watch*  
10 Shattuck St., 2nd Floor  
Boston, MA 02115

By e-mail | mens\_health@hms.harvard.edu  
(please write "On call" in the subject line)

Because of the volume of correspondence we receive, we can't answer every letter or message, nor can we provide personal medical advice.

Source: from Harvard Men's Health Watch, Harvard Health Publications, Copyright 2010 by President and Fellows of Harvard College. All rights reserved.

Harvard authorizes you to view or download a single copy of the Harvard Content on EBSCOhost solely for your personal, noncommercial use if you include the following copyright notice: "Copyright, President and Fellows of Harvard College. All rights reserved" and other copyright and proprietary rights notices which were contained in the Harvard Content. Reproduction and/or redistribution of the Harvard Content is expressly prohibited. Any special rules for the use of other items provided on EBSCOhost may be included elsewhere within the site and are incorporated into these Terms and Conditions.

The Harvard Content is protected by copyright under both United States and foreign laws. Title to the Harvard Content remains with President and Fellows, Harvard College. Any use of the Harvard Content not expressly permitted by these Terms and Conditions is a breach of these Terms and Conditions and may violate copyright, trademark, and other laws. Harvard Content and features are subject to change or termination without notice in the editorial discretion of Harvard. All rights not expressly granted herein are reserved to President and Fellows, Harvard College.

If you violate any of these Terms and Conditions, your permission to use the Harvard Content automatically terminates and you must immediately destroy any copies you have made of any portion of the Harvard Content.

## MEDICAL DISCLAIMER

The information contained in this online site is intended to provide accurate and helpful health information for the general public. It is made available with the understanding that the author and publisher are not engaged in rendering medical, health, psychological, or any other kind of personal professional services on this site. The information should not be considered complete and does not cover all diseases, ailments, physical conditions or their treatment. It should not be used in place of a call or visit to a medical, health or other competent professional, who should be consulted before adopting any of the suggestions in this site or drawing inferences from it.

The information about drugs contained on this site is general in nature. It does not cover all possible uses, actions, precautions, side effects, or interactions of the medicines mentioned, nor is the information intended as medical advice for individual problems or for making an evaluation as to the risks and benefits of taking a particular drug.

The operator(s) of this site and the publisher specifically disclaim all responsibility for any liability, loss or risk, personal or otherwise, which is incurred as a consequence, directly or indirectly, of the use and application of any of the material on this site.