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Vitamin D3 beats D2 for maintaining winter levels: Study

By Stephen Daniells, 24-Jul-2012

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Vitamin D3 is more effective at maintaining blood levels of the sunshine vitamin during winter months than the D2 form, says a new study.

"To our knowledge, this is the first study comparing vitamin D3 and D2 by mapping the time course of serum 25(OH)D from the summertime peak through to the wintertime nadir," wrote researchers in the *British Journal of Nutrition*.



Vitamin D refers to two biologically inactive precursors - D3, also known as cholecalciferol, and D2, also known as ergocalciferol. Both D3 and D2 precursors are transformed in the liver and kidneys into 25-hydroxyvitamin D (25(OH)D), the non-active 'storage' form, and 1,25-dihydroxyvitamin D (1,25(OH)2D), the biologically active form that is tightly controlled by the body.

Many researchers agree that many people are vitamin D deficient and need vitamin D supplements, but the form and recommended dose are still hotly debated.

Science

Several studies have reported that the D3 form of the vitamin is more potent than D2, with a study led by Robert Heaney, MD, from Creighton University in Nebraska reporting that D3 was 87% more potent than D2 (*Journal of Clinical Endocrinology & Metabolism*, doi: 10.1210/jc.2010-2230).

The first-ever systematic review and meta-analysis comparing the effectiveness of the vitamin D forms also recently concluded that D3 was better than D2 (*American Journal of Clinical Nutrition*, doi:10.3945/ajcn.111.031070).

The new study, by scientists from the University of Otago in New Zealand, found that 1,000 IU of vitamin D3 maintained 25(OH)D levels during winter months, whereas 25(OH)D levels decreased with the same dose of vitamin D2.

Study details

Led by Victoria Logan, the researchers recruited 95 people aged between 18 and 50 to participate in their randomized trial. Participants were divided into 3 equal groups: The first group received placebo, and the second and third groups received 1,000 IU daily doses of vitamin D2 or D3 for 25 weeks starting at the end of summer.

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Results showed that vitamin D3 levels decreased as a result of D2 supplementation, whereas 25(OH)D3 levels were maintained in the D3 supplementation group.

“Overall, total serum 25(OH)D concentrations were 21 nmol/l lower in participants receiving vitamin D2 compared with those receiving D3, among whom total serum 25(OH)D concentrations remained unchanged.

“*These findings contribute to the accumulating evidence that vitamin D3 and vitamin D2 have different pharmacokinetic profiles for serum 25(OH)D,*” wrote the researchers. “*As a result, care should be taken to distinguish the form of vitamin D used for both clinical studies and therapeutic use, particularly given that the dose employed in the present study is commonly used in over-the-counter dietary supplements.*”

“*Nonetheless, conclusions about the biological significance of the different functional effects of the two forms cannot be drawn.*”

Source: *British Journal of Nutrition*

Published online ahead of print, FirstView Articles, doi:
<http://dx.doi.org/10.1017/S0007114512002851>

“*Long-term vitamin D3 supplementation is more effective than vitamin D2 in maintaining serum 25-hydroxyvitamin D status over the winter months*”

Authors: V.F. Logan, A.R. Gray, M.C. Peddie, M.J. Harper, L.A. Houghton

Keywords: vitamin D2, D3

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