

SCIENTIFIC INFORMATION STEROGYL

EVIDENCE THAT VITAMIN D3 INCREASES SERUM 25-HYDROXYVITAMIN D MORE EFFICIENTLY THAN DOES VITAMIN D2.

Department of Laboratory Medicine, University of Toronto, and The Wellesley Hospital, Canada.

Antecedents and aim

In all species tested, except humans, biological differences between vitamins D2 and D3 are accepted as fact. To test the presumption of equivalence in humans, we compared the ability of equal molar quantities of vitamin D2 or D3 to increase serum 25-hydroxyvitamin D [25(OH)D], the measure of vitamin D nutrition.

Material and methods

Subjects took 260 nmol (approximately 4000 IU) vitamin D2 (n=17) or vitamin D3 (n=55) daily for 14 d. 25(OH)D was assayed with a method that detects both the vitamin D2 and D3 forms.

Results

With vitamin D3, mean (+/-SD) serum 25(OH)D increased from 41.3+/-17.7 nmol/L before to 64.6+/-17.2 nmol/L after treatment. With vitamin D2, the 25(OH)D concentration went from 43.7+/-17.7 nmol/L before to 57.4+/-13.0 nmol/L after. The increase in 25(OH)D with vitamin D3 was 23.3+/-15.7 nmol/L, or 1.7 times the increase obtained with vitamin D2 (13.7+/-11.4 nmol/L; P=0.03). There was an inverse relation between the increase in 25(OH)D and the initial 25(OH)D concentration. The lowest 2 tertiles for basal 25(OH)D showed larger increases in 25(OH)D: 30.6 and 25.5 nmol/L, respectively, for the first and second tertiles. In the highest tertile [25(OH)D >49 nmol/L] the mean increase in 25(OH)D was 13.3 nmol/L (P < 0.03 for comparison with each lower tertile).

Conclusions

Although the 1.7-times greater efficacy for vitamin D3 shown here may seem small, it is more than what others have shown for 25(OH)D increases when comparing 2-fold differences in vitamin D3 dose. The assumption that vitamins D2 and D3 have equal nutritional value is probably wrong and should be reconsidered.

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