Abstract


Vitamin D3 seems more appropriate than D2 to sustain adequate levels of 25OHD: a pharmacokinetic approach.


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BACKGROUND/OBJECTIVES: The superiority of cholecalciferol (D3) over ergocalciferol (D2) in sustaining serum 25-hydroxy vitamin D (25OHD) levels is controversial. To compare D2 with D3 we performed a single-blind, placebo-controlled randomized trial spanning 11 weeks.

SUBJECTS/METHODS: Healthy volunteers (n=33, aged 33.4±6 years) were divided into three groups (n=11, each): D2, D3 and placebo. Treatment started with a loading dose (100 000 IU) followed by 4800 IU/day (d) between d7 and d20 and follow-up until d77. Serum samples were obtained at baseline and at days 3, 7, 14, 21, 35, 49, 63 and 77.

RESULTS: Baseline 25OHD values in the D2 group were lower than those in the D3 and placebo groups (P<0.01). Placebo 25OHD levels never changed. As after the loading dose both D2 and D3 groups had reached similar 25OHD levels, we tested equivalence of the area under the concentration × time curve (AUC) between d7 and d77. The AUC was 28.6% higher for D3 compared with D2, and both were higher with respect to placebo. At d77, D2 25OHD levels were higher than those at baseline, but similar to placebo; both were lower than D3 (P<0.04). According to raw data, the elimination half-life of 25OHD was 84 and 111 days under D2 and D3 supplementation, respectively; after subtracting the placebo values, the corresponding figures were 33 and 82 days.

CONCLUSIONS: D2 and D3 were equally effective in elevating 25OHD levels after a loading dose. In the long term, D3 seems more appropriate for sustaining 25OHD, which could be relevant for classic and non-classic effects of vitamin D.

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