Effects of isolated vitamin D supplementation on the immune-inflammatory biomarkers in younger postmenopausal women: a randomized, double-blind, placebo-controlled trial

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Objective: to evaluate the effect of vitamin D (VD) supplementation on the immune-inflammatory biomarkers in younger postmenopausal women. Methods: In this double-blind, placebo-controlled trial, 160 postmenopausal women with amenorrhea ?12 months and aged 50-60 years were randomized into two groups: the VD group, vitamin D3 supplementation 1,000IU/day/orally (n=70) or the placebo group (n=69). The intervention time was 9 months, and the women were assessed at baseline and endpoint. Serum levels of interleukins (IL)-1?, IL-5, IL-6, IL-10, IL-12p70, IL-17alpha, tumor necrosis factor-alpha (TNF-alpha) and interferon-gamma (IFN-gamma) were determined by immunoassay, and plasma concentrations of 25-hydroxyvitamin D [25(OH)D] were measured by high-performance liquid chromatography. Statistical analysis was by a per-protocol, using Gamma distribution in repeated measures design followed by the multiple comparisons Wald test. Results: The two groups were similar at baseline in terms of clinical and laboratory parameters. After 9 months, there was a significant increase in the 25(OH)D levels from 15.0±7.5 to 27.5±10.4ng/ml in the VD group and decreased from 16.9±6.7 to 13.8±6.0ng/ml in the placebo group (p<.001). The VD group showed significant decrease in IL-5, IL-12p70, IL-17alpha, TNF-alpha and IFN-gamma values (p<0.05). The levels of IL-5 and IL-6 in the VD group were significantly lower compared to the placebo group (p<0.05). There were no significant intervention effects on serum levels of IL-1? and IL-10 in both groups (p>0.05). Conclusions: In younger postmenopausal women, isolated supplementation with 1,000IU of vitamin D3 for 9 months was associated with a reduction in pro-inflammatory biomarkers. Financial support: FAPESP process no.2014/19382-3