Abstract


Vitamin D Supplementation Affects the Beck Depression Inventory, Insulin Resistance, and Biomarkers of Oxidative Stress in Patients with Major Depressive Disorder: A Randomized, Controlled Clinical Trial.


Department of Psychiatry and Research Center for Biochemistry and Nutrition in Metabolic Diseases, Kashan University of Medical Sciences, Kashan, Iran; Department of Pharmaceutics, School of Pharmacy, and Research Center for Biochemistry and Nutrition in Metabolic Diseases, Kashan University of Medical Sciences, Kashan, Iran; Food Security Research Center, and Department of Community Nutrition, School of Nutrition and Food Science, Isfahan University of Medical Sciences, Isfahan, Iran; and Department of Community Nutrition, School of Nutritional Sciences and Dietetics, Tehran University of Medical Sciences, Tehran, Iran.

BACKGROUND: Vitamin D may decrease depression symptoms through its beneficial effects on neurotransmitters, metabolic profiles, biomarkers of inflammation, and oxidative stress.

OBJECTIVE: This study was designed to assess whether vitamin D supplementation can reduce symptoms of depression, metabolic profiles, serum high-sensitivity C-reactive protein (hs-CRP), and biomarkers of oxidative stress in patients with major depressive disorder (MDD).

METHODS: This randomized, double-blind, placebo-controlled clinical trial was performed in 40 patients between 18 and 65 y of age with a diagnosis of MDD based on criteria from the Diagnostic and Statistical Manual of Mental Disorders. Patients were randomly assigned to receive either a single capsule of 50 kIU vitamin D/wk (n = 20) or placebo (n = 20) for 8 wk. Fasting blood samples were taken at baseline and postintervention to quantify relevant variables. The primary (Beck Depression Inventory [BDI], which examines depressive symptoms) and secondary (glucose homeostasis variables, lipid profiles, hs-CRP, and biomarkers of oxidative stress) outcomes were assessed.

RESULTS: Baseline concentrations of mean serum 25-hydroxyvitamin D were significantly different between the 2 groups (9.2 ± 6.0 and 13.6 ± 7.9 μg/L in the placebo and control groups, respectively, P = 0.02). After 8 wk of intervention, changes in serum 25-hydroxyvitamin D concentrations were significantly greater in the vitamin D group (+20.4 μg/L) than in the placebo group (-0.9 μg/L, P < 0.001). A trend toward a greater decrease in the BDI was observed in the vitamin D group than in the placebo group (-8.0 and -3.3, respectively, P = 0.06). Changes in serum insulin (-3.6 compared with +2.9 μIU/mL, P = 0.02), estimated homeostasis model assessment of insulin resistance (-1.0 compared with +0.6, P = 0.01), estimated homeostasis model assessment of β cell function (-13.9 compared with +10.3, P = 0.03), plasma total antioxidant capacity (+63.1 compared with -23.4 mmol/L, P = 0.04), and glutathione (+170 compared with -213 μmol/L, P = 0.04) in the vitamin D group were significantly different from those in the placebo group.

CONCLUSION: Overall, vitamin D supplementation of patients with MDD for 8 wk had beneficial effects on the BDI, indicators of glucose homeostasis, and oxidative stress. This trial was registered at www.irct.ir as IRCT201412065623N29.

PMID: 26609167