

ORIGINAL RESEARCH COMMUNICATION

Supplementation with calcium + vitamin D enhances the beneficial effect of weight loss on plasma lipid and lipoprotein concentrations^{1,2,3}

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Background: Adequate calcium intake can have a favorable effect on some metabolic variables.

Objective: The objective of the study was to determine the effects of daily calcium intake and of supplementation with calcium and vitamin D (calcium+D) during a weight-loss intervention on blood pressures, plasma lipid and lipoprotein concentrations, and glucose and insulin concentrations in low calcium consumers.

Design: Healthy, overweight or obese women ($n = 63$) with a daily calcium intake of <800 mg/d were randomly assigned in a double-blind manner to 1 of 2 groups: the group consuming 2 tablets/d of a calcium + vitamin D supplement (600 mg elemental calcium and 200 IU vitamin D/tablet) or the group consuming placebo; both groups observed a 700 kcal/d energy restriction. These 63 women then completed a 15-wk weight-loss intervention.

Results: Initial daily calcium intake was significantly correlated with plasma HDL cholesterol ($r = 0.41$, $P < 0.001$) and with 2-h postload glycemia ($r = -0.29$, $P < 0.05$) during an oral -glucose-tolerance test, independent of fat mass and waist circumference. After the 15-wk intervention, significantly greater decreases in total:LDL and LDL:HDL ($P < 0.01$ for both) and of LDL cholesterol ($P < 0.05$) were observed in the calcium+D group than in the placebo group. The differences in total:HDL and LDL:HDL were independent of changes in fat mass and in waist circumference. A tendency for more beneficial changes in HDL cholesterol, triacylglycerol, and total cholesterol was also observed in the calcium+D group ($P = 0.08$).

Conclusion: Consumption of calcium+D during a weight-loss intervention enhanced the beneficial effect of body weight loss on the lipid and lipoprotein profile in overweight or obese women with usual low daily calcium intake.

Key Words: Caltrate • lipoproteins • glucose • insulin • blood pressure

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