Calcium and vitamin D supplementation is associated with decreased abdominal visceral adipose tissue in overweight and obese adults.

Rosenblum JL, Castro VM, Moore CE, Kaplan LM.

Massachusetts General Hospital Weight Center and Gastrointestinal Unit, Massachusetts General Hospital, Boston, MA, and the Beverage Institute for Health & Wellness of The Coca-Cola Company.

BACKGROUND: Several studies suggest that calcium and vitamin D (CaD) may play a role in the regulation of abdominal fat mass.

OBJECTIVE: This study investigated the effect of CaD-supplemented orange juice (OJ) on weight loss and reduction of visceral adipose tissue (VAT) in overweight and obese adults (mean ± SD age: 40.0 ± 12.9 y).

DESIGN: Two parallel, double-blind, placebo-controlled trials were conducted with either regular or reduced-energy (lite) orange juice. For each 16-wk trial, 171 participants were randomly assigned to 1 of 2 groups. The treatment groups consumed three 240-mL glasses of OJ (regular or lite) fortified with 350 mg Ca and 100 IU vitamin D per serving, and the control groups consumed either unfortified regular or lite OJ. Computed tomography scans of VAT and subcutaneous adipose tissue were performed by imaging a single cut at the lumbar 4 level.

RESULTS: After 16 wk, the average weight loss (~2.45 kg) did not differ significantly between groups. In the regular OJ trial, the reduction of VAT was significantly greater (P = 0.024) in the CaD group (-12.7 ± 25.0 cm²) than in the control group (-1.3 ± 13.6 cm²). In the lite OJ trial, the reduction of VAT was significantly greater (P = 0.039) in the CaD group (-13.1 ± 18.4 cm²) than in the control group (-6.4 ± 17.5 cm²) after control for baseline VAT. The effect of calcium and vitamin D on VAT remained highly significant when the results of the 2 trials were combined (P = 0.007).

CONCLUSIONS: The findings suggest that calcium and/or vitamin D supplementation contributes to a beneficial reduction of VAT. This trial is registered at clinicaltrial.gov as NCT00386672, NCT01363115.

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