

Changes in Visceral Adipose Tissue and Body Composition After a Short-term Hypocaloric High-fat Diet

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ABSTRACT

Elevated cardiometabolic risk is linked with excess visceral adipose tissue (VAT), and high-fat (HF) diets are often used to combat unfavorable body composition. **PURPOSE:** To investigate the connection between HF diets and body composition, more specifically VAT. **METHODS:** 12 healthy, sedentary individuals participated in a randomized, cross-over design study. A two-week HF or high-carbohydrate (HC) diet with a 20% total reduction in total caloric intake from their typical diet was randomly assigned to each participant. The HF diet consisted of 70% fat and 30% carbohydrate and protein, with a limit of 50 grams of carbohydrate, while the HC diet consisted of 70% carbohydrate and 30% fat and protein. After the two-weeks of their first dietary intervention, participants returned to their typical diet for a one-week washout period, followed by a second two-week diet trial opposite to the first (either HC or HF). Dual-energy x-ray absorptiometry was used to assess body composition and VAT. **RESULTS:** Percent body fat decreased following only the HF diet (pre-intervention: 29.70±9.75, HF: 27.65±10.55, and HC: 29.15±11.43%). Although total body mass decreased up to 1.5 kg from pre-intervention (78.07±17.36 kg) after either the HF (76.63±15.99 kg) or HC (76.24±15.71 kg) trial, this did not reach statistical significance. Following either the HF or HC diet, VAT in mass and volume decreased (429.57±225.43g and 464.42±244.02cm³, respectively). Though not statistically significant, the degree of change in VAT mass and VAT volume were greater in the HF diet (374±159.59g and 404.14±172.54cm³) than the HC diet (388.71±184.73g and 420.42±199.93cm³). **CONCLUSION:** A short term hypocaloric diet of either HC or HF did not result in a significant change in body composition. Despite this, a strong trend demonstrated that hypocaloric diets, whether HF or HC, could reduce total body weight. VAT and body fat percentage may be decreased most effectively by HF diets. Our study observed changes after two-week dietary interventions in healthy, sedentary individuals. Future studies examining HF diets in a variety of subject populations over a long term may provide more accurate information regarding a role of HF diets on visceral adipose tissue and body composition.