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Effect of DHEA on Abdominal Fat and Insulin Action in Elderly Women and Men

A Randomized Controlled Trial

Dennis T. Villareal, MD; John O. Holloszy, MD

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Context Dehydroepiandrosterone (DHEA) administration has been shown to reduce accumulation of abdominal visceral fat and protect against insulin resistance in laboratory animals, but it is not known whether DHEA decreases abdominal obesity in humans. DHEA is widely available as a dietary supplement without a prescription.

Objective To determine whether DHEA replacement therapy decreases abdominal fat and improves insulin action in elderly persons.

Design and Setting Randomized, double-blind, placebo-controlled trial conducted in a US university-based research center from June 2001 to February 2004.

Participants Fifty-six elderly persons (28 women and 28 men aged 71 [range, 65-78] years) with age-related decrease in DHEA level.

Intervention Participants were randomly assigned to receive 50 mg/d of DHEA or matching placebo for 6 months.

Main Outcome Measures The primary outcome measures were 6-month change in visceral and subcutaneous abdominal fat measured by magnetic resonance imaging and glucose and insulin responses to an oral glucose tolerance test (OGTT).

Results Of the 56 men and women enrolled, 52 underwent follow-up evaluations. Compliance with the intervention was 97% in the DHEA group and 95% in the placebo group. Based on intention-to-treat analyses, DHEA therapy compared with placebo induced significant decreases in visceral fat area (−13 cm^2 vs +3 cm^2, respectively; $P = .001$) and subcutaneous fat (−13 cm^2 vs +2 cm^2, $P = .003$). The insulin area under the curve (AUC) during the OGTT was significantly reduced after 6 months of DHEA therapy compared with placebo (−1119 μU/mL per 2 hours vs +818 μU/mL per 2 hours, $P = .007$). Despite the lower insulin levels, the glucose AUC was unchanged, resulting in a significant increase in an insulin sensitivity index in response to DHEA compared with placebo (+1.4 vs −0.7, $P = .005$).

Conclusion DHEA replacement could play a role in prevention and treatment of the metabolic syndrome associated with abdominal obesity.

Author Affiliations: Division of Geriatrics and Nutritional Science, Department of Medicine, Washington University School of Medicine, St Louis, Mo.