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# Effect on 24-h energy expenditure of a moderate-fat diet high in monounsaturated fatty acids compared with that of a low-fat, carbohydrate-rich diet: a 6-mo controlled dietary intervention trial<sup>1,2,3</sup>

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**Background:** Dietary fat has a lower thermogenic effect than does carbohydrate. A moderate-fat diet, high in monounsaturated fatty acids (MUFA diet), may decrease energy expenditure (EE) and thereby induce weight gain.

**Objective:** We aimed to compare changes in 24-h EE and substrate oxidation after a 6-mo controlled dietary intervention with either a MUFA or a low-fat (LF) diet.

**Design:** Twenty-seven overweight [body mass index (in kg/m<sup>2</sup>): 28.1 ± 0.4] nondiabetic subjects aged 18–36 y followed an 8-wk low-calorie diet and a 2-wk weight-stabilizing diet and then were randomly assigned to a MUFA (*n* = 12) or LF (*n* = 15) diet for 6 mo. Substrate oxidation and 24-h EE were measured by whole-body indirect calorimetry. The first measurement (0 mo) was taken during the weight-stabilizing diet, and the second measurement was taken after the 6-mo intervention.

**Results:** A tendency was seen toward a lower 24-h EE with the MUFA than with the LF diet (*P* = 0.0675), but this trend did not remain after adjustment for the initial losses of fat mass and fat-free mass (*P* = 0.2963). Meal-induced thermogenesis was significantly (*P* < 0.05) lower with the MUFA than with the LF diet, but no time × treatment interaction was found. A significant (*P* = 0.0456) treatment × time interaction was found for spontaneous physical activity.

**Conclusion:** Despite a slightly lower meal-induced thermogenesis, the MUFA diet had an effect on 24-h EE that was not significantly different from that of the LF diet after a 6-mo controlled dietary intervention.

**Key Words:** Obesity • energy expenditure • moderate-fat diet • dietary intervention • substrate oxidation • monounsaturated fatty acids

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