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ORIGINAL RESEARCH COMMUNICATION

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 1,2,3

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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 2): 28.1 \pm 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

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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 loses 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 x treatment interaction was found. A significant (P = 0.0456) treatment x 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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