



ORIGINAL RESEARCH COMMUNICATION

The Canadian Trial of Carbohydrates in Diabetes (CCD), a 1-y controlled trial of low-glycemic-index dietary carbohydrate in type 2 diabetes: no effect on glycated hemoglobin but reduction in C-reactive protein^{1, 2, 3}

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Background: The optimal source and amount of dietary carbohydrate for managing type 2 diabetes (T2DM) are unknown.

Objective: We aimed to compare the effects of altering the glycemic index or the amount of carbohydrate on glycated hemoglobin (HbA_{1c}), plasma glucose, lipids, and C-reactive protein (CRP) in T2DM patients.

Design: Subjects with T2DM managed by diet alone (*n* = 162) were randomly assigned to receive high-carbohydrate, high-glycemic-index (high-GI), high-carbohydrate, low-glycemic-index (low-GI), or low-carbohydrate, high-monounsaturated-fat (low-CHO) diets for 1 y.

Results: The high-GI, low-GI, and low-CHO diets contained, respectively, 47%, 52%, and 39% of energy as carbohydrate and 31%, 27%, and 40% of energy as fat; they had GIs of 63, 55, and 59, respectively. Body weight and HbA_{1c} did not differ significantly between diets. Fasting glucose was higher (*P* = 0.041), but 2-h postload glucose was lower (*P* = 0.010) after 12 mo of the low-GI diet. With the low-GI diet, overall mean triacylglycerol was 12% higher and HDL cholesterol 4% lower than with the low-CHO diet (*P* < 0.05), but the difference in the ratio of total to HDL cholesterol disappeared by 6 mo (time x diet interaction, *P* = 0.044). Overall mean CRP with the low-GI diet, 1.95 mg/L, was 30% less than that with the high-GI diet, 2.75 mg/L (*P* = 0.0078); the concentration with the low-CHO diet, 2.35 mg/L, was intermediate.

Conclusions: In subjects with T2DM managed by diet alone with optimal glycemic control, long-term HbA_{1c} was not affected by altering the GI or the amount of dietary carbohydrate. Differences in total:HDL cholesterol among diets had disappeared by 6 mo. However, because of sustained reductions in postprandial glucose and CRP, a low-GI diet may be preferred for the dietary management of T2DM.

Key Words: Humans • randomized controlled clinical trial • diet • carbohydrate • diabetes • monounsaturated fat

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