

6-month treatment with a low-glycaemic diet was better than a high-fibre diet for glycaemic control in type 2 diabetes

STUDY DESIGN

Design: randomised controlled trial.

Allocation: unclear.*

Blinding: blinded (technical staff and statistician for the preliminary assessment of glycated haemoglobin [HbA_{1c}] concentrations).*

STUDY QUESTION

Setting: St Michael's Hospital, Toronto, Ontario, Canada.

Patients: 210 patients (mean age 60 y, 61% men) with type 2 diabetes who were taking oral medications (except acarbose) to maintain HbA_{1c} concentrations at 6.5% to 8%.

Intervention: low-glycaemic index diet (n = 106) or high-cereal fibre diet (n = 104) for 6 months. The low-glycaemic diet consisted of low-glycaemic index breads and cereals, pasta, parboiled rice, beans, peas, lentils, nuts, and temperate fruits. The high-cereal fibre diet consisted of whole grain and whole wheat breads and cereals, brown rice, potatoes with skins, and tropical fruits. All participants were advised to avoid certain foods, including pancakes, muffins, donuts, white buns, cookies, cakes, fries, and chips.

Outcomes: included changes in HbA_{1c}, fasting glucose, cholesterol, and triglyceride concentrations; body weight; and blood pressure (BP).

Follow-up period: 6 months.

Patient follow-up: 80% (100% in primary intention-to-treat analysis).

MAIN RESULTS

The low-glycaemic diet decreased HbA_{1c} and fasting glucose concentrations and increased high-density lipoprotein cholesterol concentrations compared with the high-fibre diet (table). Groups did not differ for changes in triglyceride concentrations, body weight, or BP.

CONCLUSION

6-month treatment with a low-glycaemic index diet reduced HbA_{1c} concentrations more than a high-cereal fibre diet in patients with type 2 diabetes.

*See glossary.

ABSTRACTED FROM

Jenkins DJ, Kendall CW, McKeown-Eyssen G, et al. Effect of a low-glycemic index or a high-cereal fiber diet on type 2 diabetes: a randomized trial. *JAMA* 2008;**300**:2742–53.

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Low-glycaemic index diet v high-cereal fibre diet in type 2 diabetes*

Outcomes	Mean change from baseline		At 6 months
	Low-glycaemic diet	High-fibre diet	Difference in change between groups (95% CI)
Haemoglobin A _{1c} (%)	-0.50	-0.18	-0.33 (-0.48 to -0.17)
Fasting glucose (mg/dl)	-11	-4.4	-6.8 (-13 to -0.6)
High-density lipoprotein cholesterol (mg/dl)†	1.7	-0.2	1.9 (1.8 to 2.0)

*CI defined in glossary.

†Difference in change between groups and CI calculated from data in article.

Clinicians generally accept the idea of glycaemic indexing. What remains unresolved is the question posed by Jenkins *et al*: what is the effect of a low-glycaemic diet on glucose control in patients with type 2 diabetes? In the carefully managed 6-month study by Jenkins *et al*, the HbA_{1c} concentration dropped 0.5% in the low-glycaemic index group compared with a significantly smaller drop (0.18%) in the high-cereal fibre diet group. The study design assures that the study outcome probably reflects the comparative effect of the low-glycaemic diet, with some concerns.

The first concern in this otherwise useful study refers to researchers' decision to ask both groups to eliminate foods with high glycaemic indices (including pancakes, muffins, french fries, and

chips). If the intent of the study was to measure the comparative effect of a low-glycaemic diet, it would have been more useful to allow the high-cereal fibre group to not eliminate high-glycaemic index foods. This decision reduced the dietary difference between groups in terms of glycaemic index and may have led to an underestimation of the treatment effect.

The second concern arises from the far greater fibre intake in the low-glycaemic group compared with the high-fibre group. Also, in the diet design of the study, the low-glycaemic diet group was instructed to eat "temperate" fruits only whereas the high-cereal fibre diet group was advised to eat "tropical" fruits only. No explanation was offered for this instruction. As a result, whether the effect of the

low-glycaemic diet is attributable to the greater use of low-glycaemic foods or, alternatively, to increased fibre intake, or to the consumption of specific fruits remains unclear.

These concerns should not prevent the reader from concluding that fibre-rich low-glycaemic diets can improve glycaemic control in patients with type 2 diabetes. Whether it is the amount of fibre alone that makes a difference in glucose control, or some unidentified property of low-glycaemic index foods, it seems clear that the net benefit in metabolic control is reasonably certain.

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