

Reduced carbohydrate intake improves type 2 diabetics' ability to regulate blood sugar

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The subjects collected their diets at the Department of Nutrition, Exercise and Sports at the University of Copenhagen. Credit: Jakob Helbig/University of Copenhagen.

Patients with type 2 diabetes improve their ability to regulate blood sugar levels if they eat food with a reduced carbohydrate content and an increased share of protein and fat. This is shown by a recent study conducted at Bispebjerg Hospital in collaboration with, among other partners, Aarhus University and the Department of Nutrition, Exercise and Sports at the University of Copenhagen. The findings are contrary to the conventional dietary recommendations for type 2 diabetics.

Nutritional therapy is important to treat the type 2 diabetes optimally, but the recommendations are unclear. According to the Danish Health Authority, up to 85 percent of newly diagnosed patients with type 2 diabetes are overweight, and they are typically advised to follow a [diet](#) focused on [weight loss](#) containing fewer calories than they burn, low fat content and a high content of carbohydrates with a low glycemic index (a measure of how quickly a food affects [blood sugar levels](#)).

Reduced carbohydrate content—increase in protein and fat

A central aspect in the treatment of type 2 diabetes is the patient's ability to regulate their [blood](#) sugar levels, and new research now indicates that a diet with a reduced carbohydrate content and an increased share of [protein](#) and fat improves the patient's ability to regulate his or her blood sugar levels compared with the conventional dietary recommendations. In addition, it reduces liver fat content and also has a beneficial effect on fat metabolism in type 2 diabetics.

"The purpose of our study was to investigate the effects of the diet without 'interference' from a weight loss. For that reason, the patients were asked to maintain their weight. Our study confirms the assumption that a diet with a reduced carbohydrate content can improve patients' ability to regulate their blood sugar levels—without the patients concurrently losing weight," says Thure Krarup, MD, from the Department of Endocrinology at Bispebjerg Hospital. "Our findings are important, because we've removed weight loss from the equation. Previous studies have provided contradictory conclusions, and weight loss has complicated interpretations in a number of these studies."

New dietary recommendations for type 2 diabetics in future



An example of one of the trial meals with a reduced carbohydrate content and an increased protein and fat content. Credit: University of Copenhagen

Based on the growing body of evidence, clinicians might rethink the dietary recommendations for patients with type 2 diabetes. Thure Krarup says, "The study shows that by reducing the share of carbohydrates in the diet and increasing the share of protein and fat, you can both treat high blood sugar and reduce liver fat content. Further intensive research is needed in order to optimize our dietary recommendations for patients with type 2 diabetes." Krarup says that the findings should be confirmed in large-scale, long-term controlled trials.

The findings of the study have been published in *Diabetologia* in an article titled "A carbohydrate-reduced high-protein diet improves HbA1c and liver fat content in weight stable subjects with type 2 diabetes: a randomized controlled trial."

Summary: What did the study show?

- A diet with a reduced carbohydrate content, high protein content and moderately increased fat content improves glycemic control (the ability to regulate blood sugar) by reducing blood sugar after meals and 'long-term blood sugar' (measured by HbA1c, which is a blood test used to measure the average blood sugar level over

approximately the past two months).

- A diet with a reduced carbohydrate content, a high protein content and a moderately increased fat content reduces liver fat content.
- A diet with a reduced carbohydrate content may be beneficial to patients with type 2 diabetes even if it does not lead to weight loss.

The study forms part of CutDM, which examines whether a diet with reduced carbohydrate content and increased protein and fat content improves type 2 patients' blood [sugar](#) regulation.

28 patients with type 2 diabetes participated in the study over a total period of 12 weeks. For six weeks, the patients were given a conventional [diabetes](#) diet with a high carbohydrate content, and, for the other six weeks, they were given a diet with a reduced [carbohydrate](#) content, high protein content and moderately increased fat content. The patients were given the diet types in random order.

More information: Mads J. Skytte et al, A carbohydrate-reduced high-protein diet improves HbA1c and liver fat content in weight stable participants with type 2 diabetes: a randomised controlled trial, *Diabetologia* (2019). [DOI: 10.1007/s00125-019-4956-4](https://doi.org/10.1007/s00125-019-4956-4)

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