

# Order in which food is eaten may affect type 2 diabetics' blood sugar

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Eating protein, vegetables and fat before carbohydrates might help, study says.

(HealthDay)—The order in which obese people with type 2 diabetes eat their food can affect their blood sugar levels, a small study suggests.

The new research found that having protein and [vegetables](#) before carbohydrates was linked to lower [blood sugar](#) and [insulin levels](#) after the meal.

"We're always looking for ways to help people with [diabetes](#) lower their blood sugar," principal investigator Dr. Louis Aronne, a professor of metabolic research and of clinical medicine at Weill Cornell Medical College in New York City, said in a university news release.

"We rely on medicine, but diet is an important part of this process, too. Unfortunately, we've found that it's difficult to get people to change their eating habits," Aronne added.

"Carbohydrates raise blood sugar, but if you tell someone not to eat them or to drastically cut back, it's hard for them to comply. This study points to an easier way that patients might lower their blood sugar and insulin levels," Aronne said.

Keeping [blood sugar levels](#) under control is critical for people with type 2 diabetes. If blood sugar levels often spike too high, this can lead to serious complications over time, including heart disease.

The current study involved 11 people who were obese and had type 2 diabetes. They were all on the oral diabetes drug metformin. The study participants were given a typical Western diet meal, consisting of a variety of vegetables, protein, carbohydrates and fat. The meal included chicken breast, steamed broccoli with butter, lettuce and tomato salad with low-fat dressing, ciabatta bread and orange juice. The study included two meals eaten one week apart.

For the first meal, the researchers recorded blood sugar levels in the morning before food. The study volunteers were instructed to eat carbohydrates first, followed by protein, vegetables and fat 15 minutes later. The researchers checked the participants' blood sugar 30, 60 and 120 minutes after their meal.

A week later, the process was repeated. This time, however, the patients reversed the order in which they ate their food. Protein, vegetables and fat were eaten first. Carbohydrates were eaten 15 minutes later. And, again blood sugar levels were taken at three different times following the meal.

The study showed that after eating carbohydrates last, the participants' blood sugar levels were about 29 percent lower after 30 minutes, 37 percent lower after 60 minutes and 17 percent lower after two hours.

Insulin levels were also much lower when people had protein and vegetables first, the study revealed.

"Based on this finding, instead of saying 'Don't eat that' to their patients, clinicians might instead say, 'Eat this before that,' " Aronne said. "While we need to do some follow-up work, based on this finding, patients with type 2 might be able to make a simple change to lower their blood sugar throughout the day, decrease how much insulin they need to take, and potentially have a long-lasting, positive impact on their health."

The study was published June 23 in the journal *Diabetes Care*.

**More information:** The U.S. National Institute of Diabetes and Digestive and Kidney Diseases has more about [diabetes and food](#).

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