

# Leyla Weighs In: Have blood sugar issues? Eat carbs last



I regularly advise patients and clients with blood sugar issues such as hypoglycemia, prediabetes and type 2 diabetes to eat higher carb foods, such as fruit, *after* the main meal. More like a dessert. The rationale for this advice is that the absorption of the sugar (fructose) in fruit could then be tempered by the main meal containing protein and fats—attenuating the impact on blood sugar.

To my delight, a study in *Diabetes Research & Care* is a testament to the advice I've been giving all these years. The objective was to find out the impact, if any, on blood sugar with different sequencing of carbohydrate intake with meals.

Sixteen subjects between the ages of 35 and 65 with type 2 diabetes consumed the same meal in random order in a crossover design as follows:

1. Carbohydrates first, followed 10 minutes later by protein and vegetables
2. Protein and vegetables first, followed 10 minutes later by carbohydrates
3. All three components together: protein, vegetables and carbohydrates

All meals contained the same number of calories made up of the following foods: Grilled chicken breast for the protein portion, lettuce, tomatoes and cucumbers with vinaigrette dressing for the vegetable portion, and ciabatta bread and orange juice for the carbohydrate portion. The meal with all three components together consisted of a grilled chicken sandwich with veggie toppings.

Baseline and postprandial (after meal) measurements of glucose, insulin and glucagon-like peptide-1 levels were drawn from all participants.

The study revealed that the impact on postprandial glucose was as much as 54 percent lower when the carbohydrate portion of the meal, bread and juice, was consumed last—10 minutes after eating the chicken and vegetables as compared with when the carbs were consumed first.

Interestingly, the sandwich meal's impact on postprandial glucose was about 40 percent lower when compared with the carbohydrate first meal.

Insulin levels were also lower with the carbohydrate last meal compared with carbohydrate first—and glucagon-like peptide-1 levels were higher (this is a desirable increase in the fat burning hormone glucagon).

The researchers concluded that eating carbs last may be an effective strategy to improve blood sugar regulation.

To your health!

AP Shukla, J Andono, SH Touhamy, et al. Carbohydrate-last meal pattern lowers postprandial glucose and insulin excursions in type 2 diabetes. *BMJ Open Diab Res Care*. 2017.