

Accurate method for screening potential diabetes therapeutics developed

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Monash Nutrition researchers have developed a cutting-edge technique to measure the rate of carbohydrate digestion in humans, which will benefit future research into the discovery and development of novel

therapeutics for those with, or at risk of, diabetes and other metabolic diseases.

The new protocol overcomes some key barriers for scientists. Previous methods for testing the effects of chemicals on [carbohydrate](#) digestion predominantly used animal models and microbes, garnering results that are not representative of human digestion or inaccurate due to interferences from the test substance.

The latest findings are now published in the *Nature Protocols* journal.

According to Diabetes Australia, one Australian develops [diabetes](#) every 5 minutes and this is continuing to rise.

Carbohydrates that we eat are rapidly digested in our gut to produce sugars, which are then absorbed into the blood. It is important that the body keeps blood sugar levels within a specific target range as uncontrolled and continuously high blood sugar levels can lead to the development of metabolic diseases, particularly type 2 diabetes.

The total annual cost of diabetes in Australia is around \$15 billion.

Co-lead on the paper, Dr. Michael Houghton from the Monash University Department of Nutrition, Dietetics and Food says that blood sugar spikes can be controlled by slowing down carbohydrate digestion.

"There are several TGA-approved drugs that are highly effective at doing this but they often cause uncomfortable side effects, such as bloating and diarrhea, so exploring new ways to control [blood](#) sugar levels without this discomfort could have a huge impact on the 1.8 million Australians currently living with diabetes," said Dr. Houghton.

Up until now, researchers have been testing the effects of food and plant

extracts on the rate of carbohydrate digestion, achieving results through colorimetric measurements, which rely on the sugar products reacting with a colored reagent. The test extracts would often interfere with the results but, with the new protocol, more accurate results can be delivered by measuring direct [sugar](#) production.

There is a lot of research that suggests nutrients in the diet can be of benefit, and early results indicate that natural chemicals from plants may offer a compromise by controlling carbohydrate digestion and [blood sugar levels](#), but this pathway is still in an early phase and more funding is needed to take this research further.

"I am delighted to see this work published, it has been a real team effort and several years in the making. We hope that our definitive guide will equip researchers working in the field to deliver more accurate results that can be translated into successful clinical studies to find better therapeutics for those living with diabetes," said Dr. Houghton.

More information: Elizabeth Barber et al, Measuring key human carbohydrate digestive enzyme activities using high-performance anion-exchange chromatography with pulsed amperometric detection, *Nature Protocols* (2022). [DOI: 10.1038/s41596-022-00736-0](https://doi.org/10.1038/s41596-022-00736-0)

Provided by Monash University

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