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Debate continues on impact of artificial sweeteners

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New research from the University of Adelaide has added to the debate about how our bodies respond to artificial sweeteners and whether they are good, bad or have no effect on us.

In a study published in this month's *Diabetes Care* journal, researchers in the University's School of Medicine and the Nerve-*Gut* Laboratory have found that artificially sweetened drinks produced no different response in the healthy human gut to a glass of water.

The findings, by PhD student Dr Tongzhi Wu, are contrary to some other studies in humans and in laboratory-based research.

"This is a controversial area because there's a lot of conflicting research into artificial sweeteners," says senior author Associate Professor Chris Rayner, from the University of Adelaide's School of Medicine and Consultant Gastroenterologist at the Royal Adelaide Hospital.

"The scientific debate centres on whether artificial sweeteners have a negative impact on our bodies, such as leading to the storage of fat. There are also questions about whether they have a beneficial impact, such as producing responses that signal fullness to the brain, or if they are inert and produce no impact.

"In our most recent study involving healthy men, we found that the gut's response to artificially sweetened drinks was neutral - it was no different to drinking a glass of water.

"The fact is, the human studies have been unclear as to whether artificial sweeteners have a positive or negative effect, and this is why we're keen to better understand what's happening in our bodies," Associate Professor Rayner says.

Co-author Dr Richard Young, Senior Postdoctoral Researcher in the University's Nerve-Gut Research Laboratory, says population-level studies have yet to agree on the effects of long-term artificial sweetener intake in humans. However, a recent study has shown an increased risk of developing type 2 diabetes in regular and high consumers of artificially sweetened drinks.

"Those studies indicate that artificial sweeteners may interact with the gut in the longer term, but so far no-one's managed to determine the actual mechanisms through which these sweeteners act," Dr Young says.

"It's a complicated area because the way in which the sweet taste receptors in our gut detect and act on sweetness is very complex.

"So far it appears that artificial sweeteners have limited impact in the short term, but in people in a pre-diabetic or diabetic state, who are more likely to be regularly high users of artificial sweeteners, it might be a different story altogether. This is why more research is needed," Dr Young says.

This study has been funded by the National Health and Medical Research Council (NHMRC). Full details of the research can be found on the *Diabetes Care* website.

More information: Tongzhi Wu, Michelle J. Bound, Scott D. Standfield, Max Bellon, Richard L. Young, Karen L. Jones, Michael Horowitz, and Christopher K. Rayner. "Artificial Sweeteners Have No Effect on Gastric Emptying, Glucagon-Like Peptide-1, or Glycemia

After Oral Glucose in Healthy Humans" *Diabetes Care*, December 2013 36:e202-e203; DOI: 10.2337/dc13-0958