

Research reveals hormone action that could lead to treatments for type 2 diabetes

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(Medical Xpress) -- Researchers at the University of Cincinnati have discovered that the immediate improvement in blood sugar (blood glucose) for those with type 2 diabetes who undergo gastric bypass surgery is related to the increased action of a gut hormone that occurs after the procedure.

These findings, which are featured in the September edition of the journal *Diabetes*, could eventually help researchers find new treatments for type 2 diabetes, which affects roughly 24 million people in the United States.

"It has been found that [glucose](#) improvement for individuals with type 2 diabetes occurs immediately after [gastric bypass](#) surgery, even before any [weight loss](#) happens, but the reason for this glucose improvement is not fully understood," says Marzieh Salehi, MD, assistant professor in the division of endocrinology, metabolism and diabetes, UC Health physician and lead investigator on this study.

"It is known that in healthy individuals, the secretion of insulin—a hormone regulating glucose levels—is larger when glucose is given orally than intravenously, mainly as a result of the action of two gastrointestinal hormones, glucagon-like peptide 1 (GLP-1) and glucose-dependent insulinotropic hormone (GIP)."

Salehi adds that these gut hormones are released in response to food intake and increase insulin secretion in proportion of what is eaten.

"In this study, we found that the GLP-1 action is enhanced after gastric bypass surgery, and increased GLP-1 action contributes significantly to the increased insulin response to meal ingestion after this procedure, which could lead to glucose improvement in patients with type 2 diabetes."

In the study, researchers analyzed 12 people who previously underwent gastric bypass but did not

have [diabetes](#) and 10 healthy control subjects who did not have the surgery. Gut hormones and insulin secretion response to meal ingestion were compared between the two days of studies, in which one group was a control and the other received a compound blocking the action of GLP-1.

"Blocking the action of GLP-1 suppressed insulin secretion to a larger extent in those who had the surgery than in the control subjects," she says, adding that the exaggerated GLP-1 action to insulin response after meals could be one of the underlying mechanisms by which gastric bypass alters glucose metabolism without weight loss.

Salehi says researchers also found that another important hormone in glucose metabolism, glucagon, is increased after gastric bypass surgery in comparison to those who did not undergo surgery.

"How this change in glucagon after gastric [bypass surgery](#) alters glucose metabolism remains to be known," she says. "However, in understanding these mechanisms, we hope to come up with less invasive surgical procedures or medical treatment to treat [type 2 diabetes](#)."

Provided by University of Cincinnati

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