

# Gut hormone test predicts individual efficacy of gastric bypass

November 8 2013

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The sensitivity of the GLP-1 hormone, which is secreted by the gastrointestinal tract, can predict the metabolic efficacy of a gastric bypass. The use of a GLP1 challenge could thus function as a novel predictive biomarker for personalized treatment of type 2 diabetes and obesity. These findings were reported by scientists of Helmholtz Zentrum München and the University of Cincinnati, Ohio, USA in the current issue of the journal *Diabetes*.

The gastric bypass is one of the most commonly performed surgical procedures in the treatment of obesity. In most patients, it quickly produces substantial body [weight loss](#). Moreover, even before the weight loss, the procedure leads to improved glucose tolerance. However, these metabolic improvements vary considerably from patient to patient.

A hormone test may be able to predict the extent of metabolic improvement caused by the gastric bypass. These are the results of a study on a rodent model conducted by Prof. Dr. Matthias Tschöp and his colleagues from the Institute of Diabetes and Obesity (IDO), Helmholtz Diabetes Center at Helmholtz Zentrum München together with a team of researchers led by Dr. Kirk Habegger at the Metabolic Disease Institute of the University of Cincinnati.

After [gastric bypass surgery](#), the concentration of the gut hormone GLP-1 (glucagon-like peptide 1) in the blood rises significantly. GLP-1 increases insulin secretion and contributes to improved [blood glucose levels](#) and blood lipids. As the rat studies by the Tschöp and Habegger

research teams showed, GLP-1 responsiveness varied considerably with regard to [glucose metabolism](#). More importantly, the more responsive the animals were to GLP-1, the greater the efficacy of the gastric bypass turned out to be regarding glucose metabolism improvements.

Thus, the responsiveness to GLP-1 could be a key indicator for the success of the gastric bypass. "If our results are confirmed in clinical trials with patients, the hormone response could be tested before the planned surgery and surgeons would be able to predict how much an individual patient's glucose metabolism would benefit," said Tschöp. "This will contribute to the development of personalized therapies for [type 2 diabetes](#) and obesity. For surgical procedures such as [gastric bypass](#) this is particularly compelling because such operations are complex and cannot be easily reversed."

The numerous secondary diseases related to excess weight and obesity, such as type 2 diabetes, are among the most common diseases in Germany. These diseases are the focus of research at Helmholtz Zentrum München, a partner in the German Center for Diabetes Research (DZD).

**More information:** Habegger, KM et al (2013). GLP-1R responsiveness predicts individual gastric bypass efficacy on glucose tolerance in rats, *Diabetes*, [DOI: 10.2337/db13-0511](https://doi.org/10.2337/db13-0511)

Provided by Helmholtz Association of German Research Centres

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