

One cause of fatty deposits in the hearts of diabetes patients settled

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The impaired substrate metabolism of diabetes patients is often expressed in an increase in fatty deposits in the cells of the heart muscle. Until now, the exact cause of this was unknown. Now, Austrian researchers at the MedUni Vienna in the Division of Endocrinology and Metabolism of MedUni Vienna in cooperation with the MR Centre of Excellence Vienna have shown that high blood sugar in combination with high levels of insulin – not an influx of fats – results in such deposits within a few hours. This could form the basis for even more heart-friendly treatments of diabetes patients, especially in the early stages of the disease.

In the study, published in the respected American journal *Diabetes*, 18 healthy women and men were given a large amount of grape sugar intravenously. “Within as few as six hours, the glucose already caused

clearly visible fatty deposits in the heart. The injection of grape sugar, in combination with the release of insulin caused by the sugar, resulted in an overexertion of the heart’s metabolism“, said the study’s director, Michael Krebs of the University Department of Internal Medicine III. This proves that [fatty deposits](#) can occur without the direct influx of fats.

This was made visible for the first time using magnetic resonance imaging and spectroscopy. “This method makes it possible to observe the beating heart, not only as it works, but non-invasively and without ionizing radiation as it metabolizes energy“, explained Martin Krssak (University Department of Internal Medicine III).

In Austria alone, around 500,000 people are affected by diabetes. “The first diagnosis usually occurs by accident and on average five years too late“, said Krebs. Most patients with diabetes die of heart diseases. “Our data show that the foundation for damage can be laid early on, especially in patients with [high blood sugar](#) and hyperinsulinemia – an elevated insulin level – during prediabetes and early diabetes.“ Building on these new findings in relation to elevated blood sugar (hyperglycemia) and hyperinsulinemia, MedUni Vienna is conducting studies that should help to make the treatment of [diabetes patients](#) even more heart-friendly.

More information: “Short-Term Hyperinsulinemia and Hyperglycemia Increase Myocardial Lipid Content in Normal Subjects.” Y. Winhofer, et al. [doi:10.2337/db11-1275](https://doi.org/10.2337/db11-1275)

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