

# Protein reveals diabetes risk many years in advance

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When a patient is diagnosed with type 2 diabetes, the disease has usually already progressed over several years and damage to areas such as blood vessels and eyes has already taken place. To find a test that indicates who is at risk at an early stage would be valuable, as it would enable preventive treatment to be put in place.

Researchers at Lund University have now identified a promising candidate for a test of this kind. The findings have been published in the journal [Cell Metabolism](#).

"We have shown that individuals who have above-average levels of a protein called SFRP4 in the blood are five times more likely to develop diabetes in the next few years than those with below-average levels", says Anders Rosengren, a researcher at the Lund University Diabetes Centre (LUDC), who has led the work on the risk marker.

## Higher levels in diabetes patients

It is the first time a link has been established between the protein SFRP4, which plays a role in [inflammatory processes](#) in the body, and the risk of type 2 diabetes. Studies at LUDC, in which donated [insulin](#)-producing [beta cells](#) from diabetic individuals and non-diabetic individuals have been compared, show that cells from diabetics have significantly higher levels of the protein.

## **Link between inflammation and diabetes explained**

It is also the first time the link between inflammation in beta cells and diabetes has been proven.

"The theory has been that low-grade [chronic inflammation](#) weakens the beta cells so that they are no longer able to secrete sufficient insulin. There are no doubt multiple reasons for the weakness, but the SFRP4 protein is one of them", says Taman Mahdi, main author of the study and one of the researchers in Anders Rosengren's group.

### **Fivefold risk increase**

The level of the protein SFRP4 in the blood of non-diabetics was measured three times at intervals of three years. Thirty-seven per cent of those who had higher than average levels developed diabetes during the period of the study. Among those with a lower than average level, only nine per cent developed the condition.

"This makes it a strong risk marker that is present several years before diagnosis. We have also identified the mechanism for how SFRP4 impairs the secretion of insulin. The marker therefore reflects not only an increased risk, but also an ongoing disease process", says Anders Rosengren.

The marker works independently of other known risk factors for type 2 diabetes, for example obesity and age.

### **Motivation for lifestyle changes**

"If we can point to an increased risk of diabetes in a middle-aged individual of normal weight using a simple blood test, up to ten years

before the disease develops, this could provide strong motivation to them to improve their lifestyle to reduce the risk", says Anders Rosengren, adding:

"In the long term, our findings could also lead to new methods of treating [type 2 diabetes](#) by developing ways of blocking the protein SFRP4 in the insulin-producing beta cells and reducing inflammation, thereby protecting the cells."

**More information:** The research results have been published in the journal *Cell Metabolism*: 'Secreted Frizzled-Related Protein 4 Reduces Insulin Secretion and is Overexpressed in Type 2 Diabetes' [www.sciencedirect.com/science/.../ii/S1550413112004093](http://www.sciencedirect.com/science/.../ii/S1550413112004093)

Provided by Lund University

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