Novel mechanism of insulin resistance in type 2 diabetes
17 September 2015

Drs Barbara Leibiger and Ingo Leibiger, both members of Professor Per-Olof Berggren's research group at the Department of Molecular Medicine and Surgery, Karolinska Institutet, are particularly interested in the insulin-producing beta cells.

"The beta cell must have insulin to work properly", says Barbara Leibiger, PhD, Associate Professor, and lead author of the current study. "In a person with diabetes, the beta cells become insensitive to insulin."

The researchers have previously shown that the beta cell has two receptors with different biological functions, insulin receptor A and insulin receptor B. In the current study, they found that under diabetic conditions, even though insulin receptor B is insulin insensitive for one signalling pathway, insulin can under these conditions instead activate a different signalling pathway, leading to beta cell proliferation. The researchers also identified the factor, PI3K-C2?, that caused the switch from one signalling pathway to another.

"The results are important since it explains how the beta cell can go from a differentiated state to a proliferative state", says Ingo Leibiger, PhD, Associate Professor, who co-supervised the current study with Professor Berggren. "This means that the cells change from being glucose-responsive to instead increase in number."

According to the study authors, also including researchers from the Pohang University of Science and Technology, Republic of Korea, factors involved in the re-routing of the insulin signal represent tentative therapeutic targets in the treatment of diabetes.

More information: 'PI3K-C2? Knockdown Results in Rerouting of Insulin Signaling and Pancreatic Beta Cell Proliferation', Barbara Leibiger, Tilo Moede, Meike Paschen, Na-Oh Yunn, Jong Hoon...