Maternal low protein diet promotes diabetic phenotypes in offspring

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Millions of people throughout the world are affected by diabetes. In particular, the rise in the incidence of type 2 diabetes is associated with global increases in obesity and changes in diet. There is also a genetic component to the development of type 2 diabetes, and recent evidence suggests that the fetal environment can influence the onset of this disease.

A new study in the *Journal of Clinical Investigation* suggests that a maternal diet low in protein predisposes offspring to type 2 diabetes. Ernesto Bernal-Mizrachi and colleagues at the University of Michigan fed female mice either a normal diet or one low in protein throughout their pregnancies. Offspring of mothers fed a low protein diet had decreased insulin levels and fewer ? cells, the insulin producing cells of the pancreas.

Additionally, as adults, insulin secretion by ? cells in these offspring was defective. The ? cell dysfunction in the offspring of mothers fed a low protein diet was associated with altered expression of microRNAs and autophagy pathways. Importantly, activation of autophagy pathways in utero restored ? cell function in offspring from low-diet fed mothers.

This study provides insight into how a maternal diet that is low in protein diet alters offspring ? cell mass and function, predisposing offspring to type 2 diabetes.

More information: Maternal diet-induced microRNAs and mTOR underlie ? cell dysfunction in offspring, *J Clin Invest*. DOI: 10.1172/JCI74237