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Intermittent fasting protects mice from type 2 diabetes

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Every-other-day fasting substantially reduces the likelihood of developing type 2 diabetes in mice eating a fat-rich diet, according to new research out of the German Institute of Human Nutrition Potsdam-Rehbruecke. These findings, presented this week at the annual meeting of the Society for the Study of Ingestive Behavior in Utrecht, Netherlands, suggest that periodic fasting can reduce fat accumulation in the pancreas and, in turn, prevent the onset of type 2 diabetes. "We observed that pancreatic fat cells directly affect islet insulin secretion and that this can be altered by eating patterns" said Dr. Mandy Stadion, a post-doctoral research fellow who led this study.

"It is well known that a fatty liver promotes the development of type 2 diabetes and that intermittent fasting improves insulin sensitivity by reducing liver fat in mice and men," explained Professor Annette Schürmann, head of the Department Experimental Diabetology at the German Institute of Human Nutrition and senior author of the study. "However, little is known about the formation of fat cells in the pancreas during obesity, their detailed impact on islet-cell function and whether intermittent fasting can prevent a fatty pancreas."

For these studies the researchers provided one group of diabetes-prone mice with unlimited access to a high-fat diet. These mice were subjected to food restriction every other day (intermittent fasting). Compared to the control condition, intermittent fasting resulted in remarkably reduced pancreatic fat—similar to levels of diabetes-resistant mice—as well as in lower blood sugar levels and improved islet-cell function.

"We believe that the elevated insulin secretion of pancreatic islet cells, particularly from diabetes-prone mice, initiates a more rapid loss of function and finally islet cell-death,"explaned Schürmann. And while this loss of function ultimately contributes to the development of type 2 diabetes, the researchers are optimistic the finding that intermittent fasting can prevent the fat accumulation that leads to increased insulin may reveal a new path forward in the therapeutic prevention and treatment of diabetes.

More information: Intermittent fasting reduces pancreatic fat and prevents type 2 diabetes in mice, Presented July 2019, Society for the Study of Ingestive Behavior, Utrecht, Netherlands

Provided by Society for the Study of Ingestive Behavior