Medical Xpress

Mice subjected to shift work schedule start developing diabetes

December 19 2019

Credit: CC0 Public Domain

Exposing mice to a light-dark cycle meant to mimic the schedule of human shift workers changes insulin sensitivity and glucose tolerance in the animals, according to a study published December 18, 2019 in the open-access journal *PLOS ONE* by Bo Zhang of Southern Medical

University, China, and colleagues.

Biological clocks, synchronized with environmental light and dark cycles, are responsible for not only mediating the timing of sleep and hunger cues, but regulating glucose homeostasis and metabolism. Studies have previously shown that mutations in key clock genes can lead mice to rapidly develop metabolic disorder and obesity.

In the new work, researchers exposed female mice to a constantly shifting light-dark cycle. For four days out of each week, 12 hours of light and 12 hours of dark were aligned to the mice's previous schedule. For three subsequent days, the schedule jumped forward by eight hours, with darkness beginning partway through the normal light period. After four weeks of this alternating schedule, the researchers measured the glucose tolerance, insulin tolerance, and insulin secretion of the mice at multiple time points throughout the day, as well as food intake and physical activity. Control mice were kept on a static 12-hour light-dark cycle for the whole four weeks.

Mice on the shift work schedule had increased levels of fasting blood glucose (10.86 mmol/L vs 8.98, t=2.821, P=0.022) and hepatic glycogen (F=29.883, p

Citation: Mice subjected to shift work schedule start developing diabetes (2019, December 19) retrieved 5 May 2024 from
https://medicalxpress.com/news/2019-12-mice-subjected-shift-diabetes.html

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.