

Sex-specific role for glucokinase in autonomic nervous activity

July 26 2016



(HealthDay)—Glucokinase (Gck) in the ventromedial hypothalamic

nucleus (VMN) is involved in glucose-dependent control of autonomic nervous activity in female mice only, according to an experimental study published online July 15 in *Diabetes*.

Laura K.M. Steinbusch, from the University of Lausanne in Switzerland, and colleagues examined the role of Gck in VMN glucose sensing and physiological regulation in a study involving mice with genetic inactivation of the *Gck* gene in Sf1 neurons of the VMN (*Sf1Gck^{-/-}*).

The researchers found that *Sf1Gck^{-/-}* [mice](#) displayed increased white fat mass and adipocyte size compared with control littermates, and they had reduced lean mass, impaired hypoglycemia-induced glucagon secretion, and lack of parasympathetic and sympathetic nerve activation by neuroglucopenia. These phenotypes were seen in [female mice](#) only. In whole-cell patch clamp analysis on brain slices, in both sexes, absence of Gck expression did not prevent glucose responsiveness of glucose-excited or glucose-inhibited Sf1 neurons.

"Gck in the VMN plays a sex-specific role in the glucose-dependent control of autonomic nervous activity; this is, however, unrelated to the control of the firing activity of classical [glucose](#) responsive neurons," the authors write.

More information: [Full Text \(subscription or payment may be required\)](#)

Copyright © 2016 [HealthDay](#). All rights reserved.

Citation: Sex-specific role for glucokinase in autonomic nervous activity (2016, July 26) retrieved 20 July 2023 from <https://medicalxpress.com/news/2016-07-sex-specific-role-glucokinase-autonomic-nervous.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.