

Gut-inhabiting enterobacter increases subcutaneous fat mass

June 1 2018

A research project performed at the universities of Jyväskylä and Turku studied the effects of a specific gut enterobacterium on body fat mass.

The researchers administered either live enterobacterium or a [saline solution](#) to [mice](#) intragastrically over a 12-week period. The mice that received the enterobacterium had significantly higher subcutaneous [fat mass](#) than the mice that received saline.

"In addition, we noted that the size of the adipocytes was greater, which is an indication of hypertrophic obesity. This may be the reason for that their [adipose tissue](#) seemed less insulin sensitive. Insulin regulates the metabolism of carbohydrates and fats in the body," says the project's principal investigator, Academy of Finland Researcher Satu Pekkala, from the Faculty of Sport and Health Sciences at the University of Jyväskylä.

Pekkala's research group also found that the enterobacterium caused liver damage in the mice. This was seen in increased concentrations of liver damage markers—aspartate aminotransferase (AST) and alanine aminotransferase (ALT) - in the blood. The researchers were expecting to find liver fat accumulation in the mice but this was not the case. Instead, they found increased fibrosis in the liver. Fibrosis is the formation of excess fibrous connective tissue in an organ. In advanced fibrosis, the hepatic cells are destroyed, leading to the replacement of normal tissue by [scar tissue](#), then to a decline in the synthetic and secretory processes and finally to cirrhosis of the liver.

The researchers selected *Enterobacter cloacae* (ATCC 13047) for the study because an earlier report had found its phylogenetically close relative, *Enterobacter* B29, in a morbidly obese Chinese patient. "In the future," Pekkala says, "it would be interesting to study how frequently the abundance of gut enterobacteria is increased in obesity and [liver damage](#), and whether and how we could affect their abundance as a means to possibly reverse the health-compromising effects."

More information: Anniina Keskitalo et al, *Enterobacter cloacae* administration induces hepatic damage and subcutaneous fat accumulation in high-fat diet fed mice, *PLOS ONE* (2018). [DOI: 10.1371/journal.pone.0198262](https://doi.org/10.1371/journal.pone.0198262)

Provided by University of Jyväskylä

Citation: Gut-inhabiting enterobacter increases subcutaneous fat mass (2018, June 1) retrieved 10 April 2024 from <https://medicalxpress.com/news/2018-06-gut-inhabiting-enterobacter-subcutaneous-fat-mass.html>

<p>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.</p>
--