

# A protein could be a key weapon in the battle of the bulge

April 1 2014

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More than one-third of people in the US are obese. Obesity and its related health problems—including high blood pressure, high cholesterol, diabetes, insulin resistance, and belly fat—affect so many, yet effective treatments are very few. In a new study, Simon Musyoka Mwangi and colleagues tested whether higher levels of a certain protein help fight the weight gain and health problems caused by eating the wrong foods.

Glial cell line-derived neurotrophic factor—or GDNF for short—is a protein integral to keeping the body's systems in balance (homeostasis) and helping develop and maintain the nerve cells responsible for a host of bodily functions such as digestion and muscle control. Previous research has shown that elevated levels of GDNF can lead to weight loss in rodents and primates with age-related obesity and prevent [weight gain](#) in younger animals. In this study, researchers looked specifically at how the increased presence of GDNF might affect obesity caused by a high fat diet.

Researchers compared mice bred to have [higher levels](#) of GDNF protein with control mice. The mice were fed either a regular rodent diet (containing ~6% fat) or a high-fat diet (~34% fat). They found that the GDNF-mice fed a high-fat diet resisted diet-induced weight gain, visceral (around the organs) fat development, fatty liver, high lipid (fat) levels in the blood, and [insulin resistance](#). The GDNF mice also experienced improved insulin sensitivity and increased calorie burn compared to control mice on a high-fat diet.

More research is needed into how GDNF works in the body, but the data presented by Mwangi et al. suggest that it may cause increased calorie burn in both brown and white fat cells and in muscle tissue. Their research also suggests that GDNF and its receptors may be unique and effective targets for obesity prevention and treatment therapies.

The article "Glial cell line-derived neurotrophic factor protects against [high-fat diet](#)-induced obesity" is published in the March 2014 issue of the *American Journal of Physiology—Gastrointestinal and Liver Physiology*.

**More information:** [ajpgi.physiology.org/content/306/6/G515](http://ajpgi.physiology.org/content/306/6/G515)

Provided by American Physiological Society

Citation: A protein could be a key weapon in the battle of the bulge (2014, April 1) retrieved 2 May 2024 from <https://medicalxpress.com/news/2014-04-protein-key-weapon-bulge.html>

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