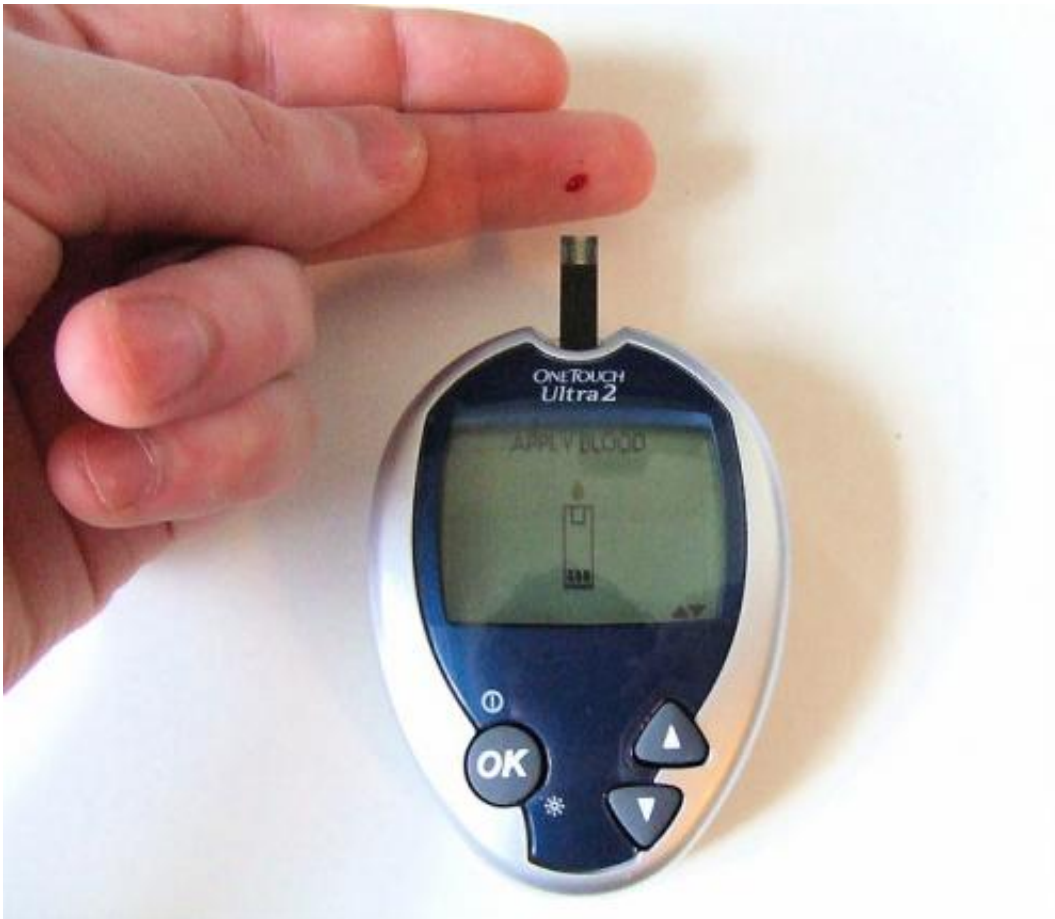


# Researchers create protein with potential for weight loss, diabetes treatment

May 2 2014, by Morgan Sherburne

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Blood glucose monitoring. Credit: Wikipedia

(Medical Xpress)—It sounds like a magic bullet: Administer a protein, watch the subject lose weight. But that's exactly what University of

Florida scientists found when they discovered a new way to deliver a protein that helps develop cells that convert fat into energy.

The study builds upon on a discovery by Bruce Spiegelman, a cell biologist at the Boston-based Dana-Farber Cancer Institute, who found that human muscles release a hormone he called irisin during exercise. Spiegelman also found that mice lost a small amount of weight when given the irisin gene using a virus to ferry it into cells.

Now the UF team—including researcher Dr. Li-Jun Yang, Shi-Wu Li, and postdoctoral researcher William Donelan—has for the first time created a stable protein form of irisin, opening the door to human studies that weren't previously possible because the virus has not been approved for use in people.

"We found that if you just deliver irisin protein to obese mice, the mice can actually reduce [body weight](#) without exercise. This study may have important implications for the therapy of obesity and Type 2 diabetes," Yang said.

Li, a research associate in the UF department of immunology, pathology and laboratory medicine, spearheaded the research. In collaboration with a group of scientists including Yuan Zhang, a graduate student in the Center for Stem Cell and Regenerative Medicine in China, Li conducted the trials in mice. The mice were fed a high-fat diet for 10 weeks, and then divided into two groups. One group was injected with irisin daily for two weeks while the other group was given saline daily for two weeks. The control group gained an average of 1.2 percent of body weight over the two-week period. The group treated with irisin lost a significant amount of weight, about 2 percent of the mice's body weight. The group was also more sensitive to insulin, which helps them store food as energy, possibly benefitting people with Type 2 diabetes.

The body contains two types of fat: white fat cells and [brown fat cells](#). White fat cells store fat, and [brown fat](#) cells convert fat into energy.

During exercise, muscles receive stress signals that trigger muscle cells to release irisin. The irisin travels to white fat tissues, where researchers think it binds to receptors on the fat cells, stimulating the transformation of [white fat](#) cells into energy-burning brown [fat cells](#).

As a result, more fat can be burned, UF researchers said.

"The ancient Greek goddess Iris was the messenger of the gods," Donelan said. "Irisin is a sort of messenger molecule, in a sense. It changes exercise into positive results for the organism."

Aside from spurring weight loss, the hormone also may help treat a host of other [metabolic disorders](#), Donelan said.

"You don't want to tell people to not exercise, but if you did get people to exercise and use irisin, it could be a pretty good treatment for conditions such as Type 2 diabetes, obesity or any type of metabolic disorders," he said.

The team published its findings in the February volume of the journal *Diabetes*. The protein is nearly identical to natural human irisin, so it could be used instead of the viral vector, said Yang. Spiegelman agreed, calling the researchers' work a "substantial step in the direction of human therapeutics," in a review of the researchers' study published in the same issue of *Diabetes*.

Provided by University of Florida

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