

Experimental drug turns 'bad' white fat into 'good' brown-like fat

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An experimental drug causes loss of weight and fat in mice, a new study has found. The study results will be presented Friday at the Endocrine Society's 97th annual meeting in San Diego.

Known as GC-1, the drug reportedly speeds up metabolism, or burning off, of [fat cells](#).

"GC-1 dramatically increases the metabolic rate, essentially converting [white fat](#), which stores excess calories and is associated with obesity and [metabolic disease](#), into a fat like calorie-burning brown fat," said study author Kevin Phillips, PhD, a researcher at Houston Methodist Research Institute, Houston.

Until several years ago, scientists thought that only animals and human infants have energy-burning, "good" brown fat.

"It is now clear," Phillips said, "that human adults do have brown fat, but appear to lose its calorie-burning activity over time."

White adipose tissue, or fat, becomes a "metabolic villain," as Phillips called it, when the body has too much of it. Some published research shows that people who have more brown fat have a reduced risk of obesity and diabetes. Researchers are now working on ways to "brown" white fat, or convert it into [brown fat](#).

GC-1 works, according to Phillips, by activating the receptors for [thyroid hormone](#), which play a role in regulating metabolism—the body's conversion of food into energy. Thyroid hormone receptors also help with adaptive thermogenesis, in which the body converts excess energy (calories and fat) to heat.

Phillips said he and other researchers at Houston Methodist Research Institute have tested the drug in hundreds of mice, with partial research funding from the National Institutes of Health. Obese mice,

both genetically obese and those with diet-induced obesity, received GC-1 treatment daily.

Genetically [obese mice](#) lost weight and more than 50 percent of their [fat mass](#) in approximately two weeks, Phillips reported. Treated mice also showed antidiabetic effects, such as a sixfold improvement or better in insulin sensitivity (how well the body clears glucose from the bloodstream). He said mice with diet-induced obesity experienced similar improvements.

The drug also induced adaptive thermogenesis in fat cells isolated from mice. Cells grown in culture in a dish, as well as tissue samples taken from obese mice, showed evidence of white-fat browning.

"Our data demonstrate that GC-1 is a novel fat-browning agent that may have use in the treatment of [obesity](#) and metabolic disease," Phillips said.

The drug has not yet undergone testing for weight loss in humans. GC-1 is being tested in clinical trials for lowering cholesterol, under the name sobetirome. However, Phillips said the doses of sobetirome used in the cholesterol-lowering studies are much lower than what would be needed for weight loss.

Provided by The Endocrine Society

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