

Like Liposuction, Without the Surgery

Georgetown Scientists Find Way to Control Fat in Mice. Will it Work in People?

By **NED POTTER**

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Scientists at Georgetown University Medical Center have found a natural chemical in mice that seems to control the formation of fat. While the scientists have many more years of work ahead of them, they said the same chemicals may very well work in humans.

The researchers, who have published their findings in this week's edition of the journal *Nature Medicine*, told ABC News they discovered that a compound called neuropeptide Y -- NPY for short -- attaches itself to fat cells and promotes their growth.

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What's more, they found a second compound that would get in the way of NPY. When they gave mice small injections, the mice lost weight, even if they ate high-fat diets and were subjected to the kind of chronic stress that is often linked with obesity.

"This is exciting stuff," said Dr. Stephen Baker of Georgetown University Medical Center in Washington, who co-wrote the study. "It's really liposuction in a bottle. You can take the compound out, inject it and basically the fat would melt away."

The mice in the experiment were made to live what the researchers jokingly called a modern American lifestyle. They were fed pellets made with lard and sugar. And every day for 10 minutes they were subjected to the kind of stress many people would recognize -- they had to share their cages with a more aggressive "alpha" mouse.

Most of the mice responded by getting fat around the abdomen and, most ominously, in organs such as the liver and heart. This is something doctors call metabolic syndrome in humans. It is linked to high cholesterol levels, hypertension stroke and heart attacks.

But the NPY blocker turned out to be an antidote.

"In the mouse where we actually injected our compound that blocks this receptor you see eradication and void where that fat used to be," Baker told ABC News. "And I think that truly is an amazing finding."

Baker is a plastic surgeon by training. He joined the experiment because he does reconstructive surgery - - such as breast reconstruction after a woman has had a mastectomy -- where extra fat could be very useful.

The study's lead author, Dr. Zofia Zukowska, also of Georgetown, has spent years studying the effects of stress, particularly its link to obesity. They and their fellow researchers said they were interested in both stimulating fat growth and stopping it.

The researchers said they were already working to see if a medication could be developed for human beings. They emphasized that years of work remained -- and could well end in disappointment -- but in some of their experiments, they injected human fat cells into mice and were able to dissolve them by blocking NPY.

"We are very confident that the NPY and its receptor system exist in humans as well," said Zukowska.

The researchers pointed out that the formation of fat is complex. They said they did not know if they were on their way to an antidote for major cases of obesity, or whether the NPY mechanism might be most useful for trimming or adding a few inches to parts of the body. They suspected that if they came up with a drug that won government approval, it would most likely to be one that could be injected into the areas where one was trying to gain or lose fat.

Zukowska said she is most interested to see if they could control abdominal fat, the kind most closely associated with disease.

"If we are able to prevent or reverse this central obesity," said Zukowska, "we're doing much more than changing the appearance. We're treating people, preventing them from having fatal diseases."

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