

Simple gut hormone combo makes our brains think we're full

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Many of us would love nothing more than to trick ourselves into believing we are full even as our stomachs remain empty. Now, a new brain imaging study reported in the November issue of the Cell Press journal *Cell Metabolism* suggests there might just be a way. The key is to go with our guts – just two gut hormones, that is.

The findings suggest that a simple hormone-inspired pill could be the long-sought answer to healthy eating, according to the researchers.

"Obesity is a major and rising problem," said Waljit Dhillon of Imperial College London. "The central dogma is we need to eat less, but that doesn't work so well. Understanding how the [brain](#) makes us feel hungry and full is an important issue for therapy."

As lunchtime approaches, our brains get excited at the very thought of that next meal, Dhillon explained. After we've eaten, the same foods that seemed so tempting to us in our hunger lose their sway.

The gut hormones peptide YY (PYY) and glucagon-like peptide 1 (GLP-1), which are both released into circulation after we eat, are known to play some role in that process. Studies in which people have been given one or the other of those hormones show a reduction in food intake and appetite. Still, no one knew what kind of influence those hormones really have on our brains.

Dhillon's team of scientists from Imperial College and GlaxoSmithKline

used functional magnetic resonance imaging (fMRI) to measure brain activity in healthy people after they'd been given PYY and/or GLP-1 in a fasted state. Those scans were compared to the brains of those same individuals when they were full from eating a standard meal.

After a meal, people's brains responded less to images of food in regions related to food reward, and they ate less. A very similar thing happens to the brains and behaviors of hungry people after they've taken PYY and GLP-1 in combination.

"Participants had eaten no breakfast, but the pattern of their brain activity looked as if they had," Dhillon said. "Their brain was tricked and they subsequently ate less of a buffet meal."

Each of the hormones worked to curb appetite on its own too, just to a lesser degree. The findings bolster the evidence in humans that these two hormones are key mediators of fullness. They might also have treatment implications.

"If we can mimic this effect in a pill that could be taken once a day or once a week, it may prove a useful treatment for obesity in the future," Dhillon said, noting that GLP-1 analogs are already prescribed for the treatment of diabetes.

Such a strategy might not only encourage us to eat less, but also to eat healthier. "When you are hungry, you tend to choose high-calorie foods," Dhillon said.

More information: Read paper abstract: [www.cell.com/cell-metabolism/a ... 1550-4131\(11\)00356-1](http://www.cell.com/cell-metabolism/a ... 1550-4131(11)00356-1)

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