

# Researchers identify peptide that reduces urge to eat

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Researchers have identified a peptide and hormone that when administered to a specific area of the brain may reduce the desire for food. The study, which appears in the journal [Neuropsychopharmacology](#), may one day lead to medications that treat obesity and binge eating disorders.

Obesity is a complex disorder affecting more than 78 million Americans which involves an excessive amount of body fat. It increases your risk of diseases and health problems such as heart disease, diabetes and [high blood pressure](#). Binge-eating disorder is a prevalent illness in America characterized by periods of excessive uncontrolled consumption of food, followed by uncomfortable fullness and feelings of self-disgust.

Using an experimental model, the researchers found when administering pituitary adenylate cyclase-activating peptide (PACAP), a peptide and hormone produced by neurons, in a specific area of the brain called the "central amygdala," it reduced the intake of food and led to weight loss.

According to the researchers PACAP is known for its food intake and body weight effects in the hypothalamus (the area of the brain known for controlling appetite). However, this is the first report of PACAP effects in the amygdala, a region of the brain outside the hypothalamus, involved in fear but also in the emotional component of eating.

The researchers also discovered how PACAP decreases food intake when injected in the amygdala. In general, food intake can be decreased

in two ways: eating fewer meals of normal size during the day, or smaller meals. "We found that amygdalar PACAP reduces the amount of food eaten within meals, but not how many meals are consumed. In addition, we found that PACAP reduced the rate of intake of food. This means that, following administration of PACAP, models were eating more slowly," explained Valentina Sabino, PhD, assistant professor of pharmacology and psychiatry, and co-director of the Laboratory of Addictive Disorder at Boston University School of Medicine (BUSM).

In addition, they found that PACAP effects on food intake and body weight were dependent on another brain factor: the growth-hormone called brain-derived neurotrophic factor (BDNF). "The effects of PACAP on [food intake](#) and [body weight](#) were absent when it was given together with another drug that blocks BDNF signaling, suggesting that PACAP acts through BDNF," said Sabino.

The researchers believe these findings have implications for a variety of conditions, since they found not only how much food subjects ate but also how fast they ate them. "The PACAP system may hypothetically be the target of medications to treat not only obesity but also binge-eating, a disease characterized by excessive, uncontrollable consumption of food within brief periods of time," added coauthor Pietro Cottone, PhD, associate professor of pharmacology and psychiatry and co-director of the Laboratory of Addictive Disorder at BUSM.

Provided by Boston University Medical Center

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