

Eat a protein-rich breakfast to reduce food cravings, prevent overeating later, researcher finds

May 19 2011



Eating healthy, protein-rich breakfasts, such as waffles made with protein powder, can be a simple strategy for improving appetite control and preventing overeating. Credit: MU News Bureau

A University of Missouri researcher has found that eating a healthy breakfast, especially one high in protein, increases satiety and reduces hunger throughout the day. In addition, using functional magnetic resonance imaging (fMRI) the researchers found that eating a protein-rich breakfast reduces the brain signals controlling food motivation and reward-driven eating behavior.

"Everyone knows that eating [breakfast](#) is important, but many people still don't make it a priority," said Heather Leidy, assistant professor in the MU Department of Nutrition and Exercise Physiology. "This

research provides additional evidence that breakfast is a valuable strategy to control appetite and regulate [food intake](#)."

In the study, Leidy assessed physiological hunger and satiety by measuring perceived appetite sensations and hormonal markers in combination with psychological reward-driven motivation to eat, using fMRI to identify brain activation in specific regions related to food motivation and reward.

The researchers decided to target 'breakfast-skipping' teens for two reasons, Leidy said. First, breakfast skipping has been strongly associated with unhealthy snacking, overeating (especially at night), [weight gain](#) and obesity. Second, approximately 60 percent of adolescents skip breakfast on a daily basis.

For three weeks, the teens either continued to skip breakfast or consumed 500-calorie breakfast meals containing cereal and milk (which contained normal quantities of protein) or higher protein meals prepared as Belgium waffles, syrup and [yogurt](#). At the end of each week, the volunteers completed appetite and satiety questionnaires. Right before lunch, the volunteers completed a brain scan, using fMRI, to identify brain activation responses.

Compared to breakfast skipping, both breakfast meals led to increased fullness and reductions in hunger throughout morning. fMRI results showed that [brain activation](#) in regions controlling food motivation and reward was reduced prior to lunch time when breakfast was consumed in the morning. Additionally, the higher protein breakfast led to even greater changes in appetite, satiety and reward-driven eating behavior compared to the normal protein breakfast.



U of Mo researchers assessed hunger and satiety by measuring appetite sensations and hormonal markers in combination with reward-driven motivation to eat, using fMRI technology to identify brain activity related to food motivation and reward. Credit: MU News Bureau

"Incorporating a healthy breakfast containing protein-rich foods can be a simple strategy for people to stay satisfied longer, and therefore, be less prone to snacking," Leidy said. "People reach for convenient snack foods to satisfy their hunger between meals, but these foods are almost always high in sugar and fat and add a substantial amount of calories to the diet. These findings suggest that a protein-rich breakfast might be an effective strategy to improve appetite control and prevent overeating in young people."

More information: The article, "Neural Responses to Visual Food Stimuli after a Normal vs. Higher Protein Breakfast in Breakfast-Skipping Teens" has recently been published online in *Obesity*.

Provided by University of Missouri-Columbia

Citation: Eat a protein-rich breakfast to reduce food cravings, prevent overeating later, researcher finds (2011, May 19) retrieved 21 November 2023 from <https://medicalxpress.com/news/2011-05-protein-rich-breakfast-food-cravings-overeating.html>

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