

Obese dieters' brain chemistry works against their weight-loss efforts

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If you've been trying to lose weight and suspect your body's working against you, you may be right, according to a University of Illinois study published in *Obesity*.

"When obese persons reduce their [food intake](#) too drastically, their bodies appear to resist their weight loss efforts. They may have to work harder and go slower in order to outsmart their brain chemistry," said Gregory G. Freund, a professor in the U of I College of Medicine and a member of U of I's Division of Nutritional Sciences.

He particularly cautions against beginning a diet with a fast or cleansing day, which appears to trigger significant alterations in the [immune system](#) that work against weight loss. "Take smaller steps to start your weight loss and keep it going," he said.

In the study, the scientist compared the effects of a short-term fast on two groups of mice. For 12 weeks, one group consumed a [low-fat diet](#) (10 percent fat); the other group was fed a high-fat (60 percent fat) and had become obese. The mice were then fasted for 24 hours. In that time, the leaner mice lost 18 percent of their body weight compared to 5 percent for the [obese mice](#).

Freund said that there is an immune component to weight loss that has not been recognized. "Our data show that fasting induces an anti-inflammatory effect on a lean animal's neuroimmune system, and that effect is inhibited by a high-fat diet. Some of the brain-based chemical

changes that occur in a lean animal simply don't occur in an obese animal," he said.

This breakdown occurs because obese animals resist downregulation of [genes](#) that activate the interleukin-1 (IL-1) system and associated anti-inflammatory cytokines, he said.

The scientist also studied differences in the behavior of the two groups of mice, monitoring how much they moved, administering tests to discern the animals' ability to learn and remember, and noting whether the mice exhibited signs of depression or anxiety.

The results suggest that beginning a diet with a fast or near-fast may alter [brain chemistry](#) in a way that adversely affects mood and motivation, undermining the person's weight-loss efforts.

"The obese mice simply didn't move as much as the other mice. Not only was there reduced locomotion generally, they didn't burrow in the way that mice normally do, and that's associated with depression and anxiety," he said.

Beginning a weight-loss program in a depressed frame of mind and with decreased motivation doesn't bode well for the diet's success, he noted.

More information: www.nature.com/oby/journal/vao...full/oby201173a.html

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