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Faculty Abstract

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Which Comes First, Overeating or Obesity?

ABSTRACT: The conventional approach to weight loss, based on the First Law of Thermodynamics, considers obesity a simple problem of calorie imbalance: too many consumed, not enough expended. Because fat has twice the calorie content of the other major nutrients, the mainstay of obesity treatment for the last half century has been the low fat diet. Unfortunately, this approach has shown exceptionally poor long-term effectiveness in practice.

This conventional approach disregards decades of research into the biological control of body weight. Feeding studies show that simple calorie reduction elicits physiological adaptations – increasing hunger and decreasing metabolic rate – that antagonize weight loss over the long term. According to an alternative hypothesis, the anabolic state of fat cells plays a dominant role in the control of body weight. When fat cells become excessively anabolic, they take in and store excessive calories. Consequently, the concentration of metabolic fuels in the blood stream declines, triggering the starvation response.

Numerous factors in the environment affect the anabolic state of fat cells, but chief among them is consumption of processed carbohydrate, including refined grains, potato products and concentrated sugar. These high glycemic load foods stimulate, calorie for calorie, more insulin secretion than unprocessed carbohydrates, protein or fat. Thus, the increasing amount and processing of dietary carbohydrate may have elicited adverse biological changes in the US population and driven the obesity epidemic. If this hypothesis is true, than a focus on dietary quality, rather than calorie balance, would produce better results in the long-term treatment of obesity.