

Overeating Triggers Vicious Cycle

New research published in the journal *Cell* delivers a timely message, especially with the advent of the holiday season. Overeating can actually stimulate a metabolic response in the brain that induces cravings to eat more, creating a vicious cycle of elevated calorie consumption that can lead to obesity, diabetes and insulin resistance. A high-fat diet only magnifies the problem, escalating the cycle twofold.

Foods consist of proteins, carbohydrates and fats, which are broken down in your body during a process called metabolism. The digestive system metabolizes the food into body fuel, sugars and acids, and either uses it immediately or stores it in tissues (liver, muscles and body fat). However, when chemical reactions interrupt the process, metabolic disorders, such as diabetes, can result.

It's the metabolic response in the brain's hypothalamus area and metabolic inflammation—a chronic state characterizing obesity and associated diseases—that researchers at the University of Wisconsin-Madison and University of California – San Diego investigated.

Study basics. Overnutrition, researchers say, is linked with chronic inflammation in metabolic tissues. It's been long recognized that overeating can induce “inflammatory responses in the peripheral metabolic tissues (metabolic inflammation) and therefore cause various metabolic defects in those tissues that underlie T2D [type 2 diabetes].”

The hypothalamus is the command center for regulating energy homeostasis, mediated by orexigenic (appetite stimulating) neurons that coexpress two neuropeptides and anorexigenic (appetite diminishing) neurons, which coexpress two other neuropeptides.

In other words, it “regulates appetite, feeding behavior, energy and, therefore, body-weight balance and metabolic processes,” per the study's senior author, Dongsheng Cai, MD, PhD at the University of Wisconsin.

A loss of the leptin signaling (a hormone inducing a sensation of fullness) or insulin signaling (promotes glucose storage) in the hypothalamus can promote or induce obesity or type 2 diabetes, according to this latest research conducted with various genetic mouse models.

Overeating activates a normally inactive hypothalamic IKKb/NF-kB, a protein complex that is the “master switch and central regulator of innate immunity and related functions.” Per the study, IKKb/NF-kB is a mediator of metabolic inflammation.

Researchers explored whether IKKb/NF-kB is the fundamental connection between overnutrition and the dysfunctions of hypothalamic signaling that cause obesity and associated problems. IKKb/NF-kB in peripheral metabolic tissues affects glucose and protein metabolism in tissue-specific manners.

A look at the findings. Per a MedicineNet.com article on topic, Cai stated that “persistent stimuli from excessive amount of calories can trigger this response before the overt onset of diabetes, and this response when induced can promote overeating, contributing to increased levels of caloric overconsumption . . . this process can be like a vicious cycle.”

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Statistically, Americans gain 1 to 10 pounds during the holiday season. Experts say to zero in on these three areas:

- 1. Keep watch**—be aware of what you're eating and how much. Allow for those special treats, but in moderation, like an “appetizer-sized helping.” Focus on maintaining weight during the holiday season, rather than losing weight. Stay moving, don't get into a lull and use the season to lie around and eat those holiday treats. Allow for some treats, then get into a healthier eating routine the next day and walk.
- 2. Plan**—don't go to a holiday party hungry. Leave the food area and mingle in another room. Take unhealthy food gifts to the office to share. Take healthy snacks on a trip. And take a brisk walk after a holiday meal or party, even if it's only for 5 or 10 minutes.
- 3. Manage stress**—lower expectations, learn to say “no” and don't overload your schedule. Avoid using food as a comfort for sadness or to “fill the silence” at social events. Be good to yourself and walk, jog, bike, etc. to ease stress and clear your thinking.

Per the findings . . .

- The master switch IKKb/NF-kB remains suppressed although enriched in the hypothalamus under conditions where nutrition is normal.
- Overating activates IKKb/NF-kB—and a chronic, high-fat diet doubled that activation.
- Researchers believe this study with mice can apply to humans.
- Suppressing this disease pathway in the hypothalamus may aid the overweight/obesity epidemic sweeping the country as well as its byproducts, heart disease and cancer.

Smart intervention: Cenegenics. Exercise and the right nutrition can correct abnormal brain regulation. The key, of course, is recognizing the critical need for that change and getting ongoing expert help to make lifestyle interventions successful in the short and long run.

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- Nighttime nibbler
- Convenient diner—eats often
- Fruitless feaster—no fruits or veggies
- Steady snacker
- Hearty portioner
- Swing eater—on/off with good nutrition

Exercise Personalities

- Couch champion
- Uneasy participant—self-conscious
- Fresh starter—novice
- All-or-nothing doer—gung ho or does nothing
- Set routine—never changes regimen
- Tender bender—limited by aches/pains
- Rain-check athlete—good intentions gone awry

Personality types based on Kushner/Blatner's Counseling Overweight Adults: The Lifestyle Pattern Approach and Tool Kit

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Discussions are always confidential and without obligation.