

live healthy



You're working hard to keep your diet on track, but sometimes the urge to pig out is overwhelming.

It's not just a matter of having wimpy willpower.

Compelling research shows that a handful of hormones may also be to blame. Here's how to get the better of them.

BY BETH HOWARD

# Outsmart Your Fat Hormones

HORMONE  
CULPRIT  
ghrelin  
IT WREAKS  
HAVOC  
if you skimp  
on protein

**THE SCIENCE BEHIND IT** Ghrelin, a hormone that's produced in the gut, normally spikes before mealtime, stimulating your appetite. The bigger the spike, the hungrier you are. Eating protein, however, curbs ghrelin. Researchers at the University of Washington in Seattle

gave volunteers three different shakes containing the same number of calories over several weeks—one was 80 percent fat, another was 80 percent carbs, and the third was 80 percent protein. "The protein shake suppressed ghrelin—and people's

appetite—the longest, by six hours,” says lead researcher David E. Cummings, M.D. Conversely, the carb shake was digested so fast, it caused hunger-inducing ghrelin to plummet and rebound to even higher levels than it was pre-drink.

**YOUR OUTSMART-IT PLAN** Increase the proportion of lean protein in your diet to about 25 percent—that’s 500 calories if you eat 2,000 calories a day. “Almost all diets that work well are relatively high in protein,” says Dr. Cummings. Protein-rich between-meal snacks, such as low-fat cheese, should help control hunger. (See our snacking story, page 71.)



Eating sugary or fatty food in combination with high cortisol levels causes flab to be deposited around your middle and central organs.

**HORMONE  
CULPRIT**  
**cortisol**  
**IT WREAKS  
HAVOC**  
during stressful situations

**THE SCIENCE BEHIND IT**

When you’re tense, your adrenal glands increase the release of cortisol, the infamous “stress hormone.” Your body interprets the sudden surge as a response to a fight-or-flight situation, causing you to crave high-fat and high-sugar foods—meant to replenish the energy your body believes it spent warding off danger. What’s worse, cortisol is also partly responsible for the unsightly—and unhealthy—belly bulge, a known risk factor for heart disease and diabetes, say researchers from the University of California at San Francisco. “Because the abdomen has a greater density of cortisol receptors than other areas in the body, stress affects

that tissue the most. So eating sugary or fatty food in combination with high cortisol levels tends to cause fat to be deposited around your middle and central organs,” says Emily Newman, Ph.D., a lecturer in health psychology at the University of Edinburgh.

**YOUR OUTSMART-IT PLAN** Exercise. Elite athletes have lower levels of cortisol under stress than nonexercisers, finds a recent study from the University of Zurich. Physical activity triggers the release of endorphins that “signal to the brain that everything is okay, helping to drive cortisol production down,” says neuropsychiatrist Louann Brizendine, M.D., author of *The Female Brain*. Not a marathoner? Yoga and meditation suppress the hormone too. In fact, cortisol levels dip as much as 25 percent after just one 50-minute yoga session, according to the Center of Integrative Medicine at Thomas Jefferson University in Philadelphia.

**HORMONE  
CULPRIT**  
**leptin**  
**IT WREAKS  
HAVOC**  
after you consume high-fructose corn syrup and sugar

**THE SCIENCE BEHIND IT** High-fructose corn syrup—present in everything from soda to applesauce—has been shown to lower levels of leptin, a hormone that gives the “I’m full” signal to your brain, say researchers from the Monell Chemical Senses Center and the University of Pennsylvania in Philadelphia. And now it appears that sugar does the same thing,

according to a recent study from the University of California at Davis. While consuming any food containing sugar or high-fructose corn syrup may lead to weight gain, sweet drinks worry experts the most. In addition to lowering leptin, “liquids put more strain on the liver than food because they’re processed so quickly,” says study author Karen Teff, Ph.D. Experts believe that this fast action may decrease the liver’s ability to store the sugar, leading to an unhealthy jump in triglycerides, a particularly harmful blood fat. Unfortunately, research shows that some Americans get as much as 15 percent of their calories from sugar-sweetened beverages.

**YOUR OUTSMART-IT PLAN** Review ingredients. “If sucrose or high-fructose corn syrup is one of the first three items listed, consider choosing something else instead,” Teff says.

**HORMONE  
CULPRITS**  
**pyy & glp-1**  
**THEY WREAK  
HAVOC**  
if you wait more than four hours to eat

**THE SCIENCE BEHIND IT** After a meal, PYY, a chemical that’s produced in your gastrointestinal system, travels to the brain, where it helps to switch off the urge to eat. An empty stomach squelches the production of PYY, so the longer you wait between meals, the more you may consume before the “full” switch kicks in. The key is to keep hormone production revved up. In

one study, people who were offered an all-you-can-eat buffet two hours after getting injected with the hormone ate about 30 percent fewer calories than they did without the shot.

**YOUR OUTSMART-IT PLAN** While PYY injections aren’t available outside a research lab (at least not yet), eating frequent small meals may help activate the release of the hormone and another satiety hormone, GLP-1, increasing your feeling of fullness, suggests Eric Doucet, Ph.D., a research scientist at the University of Ottawa. “It seems that these two hormones may be more responsive to carbohydrates and proteins. So eating snacks that have a higher protein and carb content may increase hormone levels, which could in turn reduce appetite between meals.” May we suggest a yogurt smoothie?

# progesterone

HORMONE  
CULPRIT

IT WREAKS  
HAVOC

during PMS

## THE SCIENCE BEHIND IT

Estrogen dominates the first half of your menstrual cycle, peaking

during ovulation (about 14 days after the first day of your period) and leaving you energized. After ovulation, progesterone increases in preparation for a possible pregnancy, slowing you down and prompting you to eat more calories, sugar and fat, says Dr. Brizendine. Scientists say this is nature's way of ensuring optimal nutrition for a growing baby.

**YOUR OUTSMART-IT PLAN** Start overhauling your diet in the first two weeks of your menstrual cycle (day one is the first day of your period), when eating healthy will be easier. "You don't want to start a new habit when progesterone is raging," Dr. Brizendine says. "You're least likely to succeed then." Also, consider days 14 through 28 of your cycle "red alert days," when your fitness vigilance matters most. "You have to psych yourself up to work against the progesterone surge. This is not the time to skip the gym," she adds.

# ghrelin & leptin

HORMONE  
CULPRITS

THEY  
WREAK HAVOC

if you don't get  
enough sleep

to four hours of shut-eye for two nights, the subjects' lowered leptin and raised ghrelin levels increased their desire for calorie- and carb-dense fare by up to 45 percent.

**YOUR OUTSMART-IT PLAN** Aim for at least seven and a half hours of rest a night. Can't get it all in one shot? Try recovering your sleep debt by snoozing an extra 90 minutes on Saturday

and Sunday and adding 30 minutes each night the following week until you've zeroed out your balance, says Breus. If that's impossible, remember, all sleep is beneficial—even catnaps.

"Just 30 minutes can help reset appetite-regulating hormones," says Sara Mednick, Ph.D., an assistant professor of psychiatry at the University of California at San Diego. If neither strategy works for you, manage attacks of sleep-deprived munchies by stocking your fridge with healthy fruits and vegetables.

## THE SCIENCE BEHIND IT

They're ba-ack! These hormones mess with your weight on their own *and* together. "A lack of sleep drives appetite-inducing ghrelin up and leptin—the 'I'm full' hormone—down, so you wind up feeling even hungrier," says Michael J. Breus, Ph.D., author of *Good Night: The Sleep Doctor's 4-Week Program to Better Sleep and Better Health*. Not only do you want to eat more, you crave junk food to get a quick energy boost. When University of Chicago researchers restricted healthy volunteers