

Is Your Body Starving?

If you are overweight or obese, then believe it or not, your brain likely believes that you are. Most current weight-related research points to a handful of hormones that might be sending your brain all of the wrong signals. In effect, an overweight person continues to receive signals to eat, and to store extra weight, even though in reality they have eaten plenty, and they have plenty of energy reserves. The vast majority of us in the fields of nutrition and weight loss no longer believe that for many, the key to weight management is in willpower, or even simply burning more calories than you consume, but instead lies in controlling the hormones related to hunger, and the hormones that can make you fat.

The hormones themselves are rather easy to understand, as is the body's desire to efficiently store energy. After all, as a species, one of the biggest emergencies we might face has been famine. Those of us who were lucky enough during famine to have a little extra adipose tissue (fat), survived. Eventually over time, our genes changed so that if even short episodes of hunger occurred, production of certain hormones would surge, allowing for more hunger (and increased drive to seek any food available before the pending famine), and more storage (so that we would be one of the lucky survivors when that food ran out). But why, with adequate food supply for most, do some of us still more efficiently store energy as fat than others? This is where an understanding of the hormone players can be somewhat helpful; only somewhat, because even scientists involved in researching these hormones (such as understand the nuances of their functioning

Leptin is perhaps the hormone most actively being researched, as it was only discovered a relatively short time ago, in 1994. It is produced in fat cells, and as it circulates to the brain, it gives the brain a signal to store adequate fat (energy). It's believed that individuals likely have a genetically predetermined threshold for leptin levels, meaning that the "adequate" signal for one person might occur at a different body weight than for another. This would signify that we all likely have different set points for our weight, and these set points should not be based solely on height and sex, as we have thought for so long. So once you reach your body's specific "adequate" leptin level, your body will burn extra energy instead of storing it.

What also appears evident is that overweight people may have plenty of leptin, but that their brains don't receive the signal that it is there. This is termed "leptin-resistance," and is very similar to "insulin-resistance," found in those with metabolic syndrome and/or non-insulin dependent diabetes. In both cases, the hormones are present, but the brain-receptor cannot recognize them. With resistance the hormone levels continue to rise, as there is no signal to shut production off. Rising leptin levels lead to more efficient energy storage; rising insulin levels lead to a signal of famine, and thus more hunger. Elevated leptin levels also trigger a reward center in our brains that respond to food, especially those that are caloric-rich. In other words, even as your body is growing obese, your brain believes you are starving, and all the while keeps signaling you to eat, store, eat, store.

The question remains as to why such instances of resistance occur. The hope is that research will reveal to us how to prevent them in the first place and thus the epidemic of obesity might be solved.

Besides leptin there are other hormones that contribute to obesity; unfortunately they are even

less understood. Ghrelin is also a recent discovery and is actually produced in the stomach. It signals hunger and increased reward for sweet and fatty foods, and you guessed it, overweight people produce more of it. There is also a hormone called PYY, which seems to do the opposite, signaling satiety. Another hormone affecting our weight is called adiponectin, which helps some people burn more fat.

It is exciting that we are learning more about weight gain and obesity. As someone who has multiple patients that I know are doing everything "right" and not seeing results, it is also comforting to know that we might soon be able to provide better solutions. In the meantime, we should focus on following the nutritional guideline of promoting blood sugar balance, as insulin remains the hormone that we understand the most. Sugars need to be limited to avoid sugar spikes and valleys, and when they are consumed, they should always be paired with protein or fiber. Sugar substitutes should be avoided as they likely lead to more sugar cravings, insulin resistance, and likely changes in leptin and ghrelin levels. A tablespoon or two of apple cider vinegar taken before meals can decrease insulin resistance, as can consuming cinnamon. If dietary modifications don't work, a naturopath or integrative provider can help you further.

As for manipulation of the other hormones involved, we will likely see more information linking lifestyle habits to fluctuations in hormone levels in general. Sleep deprivation for example has been shown to increase ghrelin levels and as such, increase hunger and fat storage. Getting adequate sleep should be a priority. If issues such as sleep apnea occur, we should begin our weight loss attempts with a trip to a sleep center for treatment. We also expect more studies directly related to exercise, but they may be less focused on calorie expenditure than those conducted in the past, and be more focused on increasing daytime energy and maintaining energy expenditure routines.

It can be comforting to know that being overweight may not be your fault, but hormone induced "starving" only makes it more important to abide by the basic lifestyle tenets to eat well, sleep well, exercise, and decrease stress, not only to combat a genetic predisposition to become overweight, but perhaps to help reverse it.

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