

## UNDERSTAND YOU HORMONES

*Knowing how different hormones operate to regulate body weight is important in making food choices that support your natural set point weight and you health. Foods we eat may either help of disrupt hormonal processes aimed at maintaining the balance in our weight.*



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## Hormonal Regulation of Body Weight

Our body has a very intelligent system of regulation of all processes in it, including the weight. Naturally a healthy body tries to always keep itself in a state of balance, asking for as much food as it needs, and in the event of undereating or overeating—compensate by making us more or less hungry later. The way the body does it is by secreting signaling molecules—hormones and neurotransmitters, acting on different levels to help regulate food intake and energy expenditures.

It is suggested that everybody has a natural set point—weight range within which the body tries to stay, usually no more than 20 lbs.<sup>1</sup>

The hormones implicated in the process of body weight regulation are **insulin**, **leptin**, **glucagon**, **ghrelin**, and **adiponectin** among others. Let's look at how they work in the body to help regulate weight.

## INSULIN

Insulin is a hormone released from the pancreas in response to food intake. It is mostly released in response to carbohydrate containing foods—like grains, fruits and starches, breads, pastries, and sweets, and also to some proteins in the diet. Insulin lowers blood glucose by shuttling it into the cells. If the meal consumed contained a lot of simple sugars (processed food with added sugar, soda, pastries, candy), a lot of insulin will be released to rapidly reduce the influx of glucose into the blood stream, which often leads to a sudden drop in blood sugar and subsequent hunger pangs, often leading to overeating and weight gain. If the meal contained fiber (from vegetables, legumes, whole grains, fruits) and protein, the release of glucose into the blood will be slower, requiring less insulin and keeping the person full for longer, which is good for weight management. If too much insulin is secreted in response to frequent high-carb meals with lots of sugar, insulin resistance may develop, that could lead to weight gain and type 2 diabetes.<sup>2</sup>

## LEPTIN

Leptin is a hormone released by the fat cells in response to increased fat storage. It suppresses appetite and increases energy expenditure, prompting the body to use up elevated stored fat to bring the body back to its set point. If leptin's signals are not considered, weight gain occurs. With excessive weight gain the body becomes resistant to leptin, ignoring its messages to stop eating and start moving, leading to greater weight gain.<sup>3</sup>

## ADIPONECTIN

Adiponectin is also produced by fat cells but its action is the opposite of leptin—it is secreted in response to reduced fat stores and stimulates appetite.<sup>3</sup>

## GHRELIN

Ghrelin is secreted from the stomach in response to hunger, it stimulates appetite and promotes food seeking behaviors. Ghrelin is mostly released by the cells from a top portion of the stomach. Those who undergo a weight-loss surgery often have that portion stapled off or removed, reducing the amount of ghrelin produced and therefore suppressing appetite.<sup>4</sup>

## GLUCAGON

Glucagon is secreted by the pancreas and signals the glucose storage in the body—glycogen to break down into glucose to be used by the body for energy during the times of fasting, reduced food intake or increased energy expenditures (sports and fitness activities). This is one of the systems to provide energy to the body before tapping into its fat stores. Glucagon plays an important role in glucose regulations, utilization of fat for energy, increased satiety and energy expenditure.<sup>5</sup>



Photo courtesy of CDC/ Debora Cartagena

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