Appetite and satiety signals are the body's way of controlling when we eat and when we stop. Appetite is the feeling of hunger that drives us to eat, while satiety is the sense of fullness that tells us to stop. These signals help the body maintain energy balance, making sure we get enough food without overeating.

The brain, especially a part called the hypothalamus, is the control center for appetite and satiety. It constantly receives messages from hormones, the digestive system, and fat stores about the body's energy needs. Based on these signals, the brain creates the feelings of hunger or fullness that guide eating behavior.

One of the main hunger hormones is ghrelin. It is produced in the stomach and rises before meals, creating the sensation of hunger. Ghrelin drops after eating, which reduces the drive to continue eating. This hormone is often called the "hunger signal."

On the other hand, leptin is a major fullness hormone. It is released from fat cells and tells the brain that enough energy is stored, reducing appetite. High levels of leptin normally help prevent overeating, but in obesity, the body can develop leptin resistance, meaning the brain does not respond to leptin signals as well.

GLP-1, which we studied earlier, is another satiety hormone. It slows gastric emptying, helps release insulin, and makes a person feel full after eating. Other hormones, such as peptide YY (PYY) and cholecystokinin (CCK), also add to the feeling of fullness after meals, working together with GLP-1 to reduce appetite.

Appetite signals are also influenced by blood sugar levels. When blood sugar drops, the brain senses the need for more fuel and triggers hunger. When blood sugar rises after a meal, fullness signals increase. This connection shows how closely appetite is linked to blood sugar regulation and energy use.

Lifestyle and emotions can affect appetite and satiety signals too. Stress, lack of sleep, and emotional changes can interfere with these natural signals. For example, stress can increase appetite through cortisol, while poor sleep raises ghrelin and lowers leptin, making a person hungrier. This explains why sleep and stress management are important for healthy eating.

In summary, appetite and satiety signals are controlled by a network of hormones, the digestive system, and the brain. Ghrelin makes us hungry, leptin and GLP-1 help us feel full, and other hormones add balance. When these signals work properly, they keep eating in line with the body's energy needs. When they are disrupted, problems like overeating or weight gain can occur.