

Glucagon is a hormone made in the pancreas, specifically by special cells called alpha cells. It works as the “opposite partner” of insulin. While insulin lowers blood sugar by moving glucose into the body’s cells, glucagon raises blood sugar by releasing stored glucose from the liver. Together, insulin and glucagon keep blood sugar levels balanced so the body has the energy it needs.

The main job of glucagon is to prevent blood sugar from dropping too low, a condition called hypoglycemia. When a person hasn’t eaten for several hours, the body still needs fuel to work properly. Glucagon signals the liver to break down glycogen, which is stored glucose, and release it into the bloodstream. This raises blood sugar to a safe level and provides energy to the brain, muscles, and other organs.

Glucagon also helps the body make new glucose from non-carbohydrate sources. This process is called gluconeogenesis. For example, proteins and fats can be converted into glucose when needed. This is especially important during fasting, exercise, or times of stress, when the body may not have enough sugar coming directly from food.

In emergency medicine, glucagon is often used as a life-saving treatment. People with diabetes who take insulin may sometimes experience dangerously low blood sugar. If they become unconscious or unable to swallow, an injection of glucagon can quickly raise their blood sugar by forcing the liver to release stored glucose. Glucagon kits are commonly prescribed for people with diabetes for this reason.

Glucagon also plays a role in fat breakdown. It can signal the body to use fat for energy when glucose levels are low. This helps the body survive longer periods without food by switching fuel sources. In this way, glucagon is not just about raising blood sugar but also about managing overall energy balance.

Too much or too little glucagon can cause problems. If glucagon is released too often, it can lead to high blood sugar (hyperglycemia), which is a challenge in diabetes. On the other hand, if glucagon doesn’t work properly, the body may have trouble raising blood sugar during fasting, which can be dangerous. That is why the balance between insulin and glucagon is so important.

Scientists are studying glucagon not only for emergency diabetes care but also for new treatments. Glucagon-like drugs are being tested for obesity, since they may help burn fat and increase energy use. Researchers are also looking at combining glucagon with GLP-1 medicines to create stronger treatments for diabetes and weight management.

In summary, glucagon is a hormone that raises blood sugar by signaling the liver to release stored glucose and even create new glucose when needed. It protects the body from low blood sugar and plays a key role in balancing energy with insulin. Beyond blood sugar, glucagon influences fat burning and is being studied for new medical uses. Understanding glucagon helps explain how the body keeps energy steady and safe.