

What is Blood Glucose Regulation?

Blood sugar regulation is the process of maintaining blood glucose within an optimal range

Blood sugar regulation is the process by which the levels of blood sugar, primarily glucose, are maintained by the body within an optimal biological range. This tight regulation is called glucose homeostasis. Glucose comes from two major sources: food and your liver (which both stores and makes glucose). When you eat, your blood sugar levels go up and your body releases insulin to lower them. When your glucose levels are low, such as when you haven't eaten in a while, the liver breaks down stored glycogen into glucose to keep your glucose level within a normal range. It's a bit like a see-saw.

Blood Sugar Range

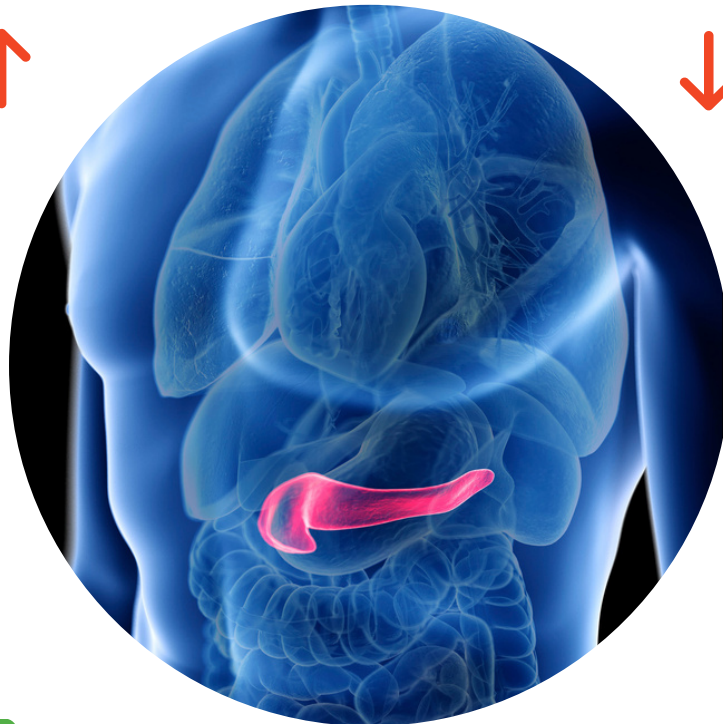
A normal blood sugar level is 4 to 5.9 mmol/L before eating and under 7.8 mmol/L 90 minutes after eating a meal (1, 2)

The body has several ways to keep blood sugar within the normal range. The pancreas gland secretes two hormones and they are responsible for regulating glucose levels in blood; Insulin which lowers blood sugar, and glucagon, which raises it. They are both secreted in response to blood sugar levels, but in opposite fashion!

Insulin



Insulin is normally secreted by the pancreas in response to you eating. The stimulus for insulin is **HIGH** blood glucose, typically after eating a meal. In response to insulin, your cells absorb glucose from the blood to lower blood glucose levels back into normal range.



Glucagon



Glucagon is also secreted by the pancreas in response to **LOW** blood glucose, such as between meals, and during exercise. As blood glucose levels dip, more and more glucagon is secreted to balance the levels of glucose in your blood to avoid you having a sugar crash.

Diet & Nutrition

Diet plays an important role in blood glucose regulation. Blood sugar levels are directly influenced by the amount of sugars in the foods we eat. Sugars are most prevalent in carbohydrate foods including grains, cereals, fruits and some vegetables. Whereas protein foods and fats typically contain no, or trace amounts, of sugars. Balancing dietary intake of these foods can help balance blood sugar levels.



1. <https://www.nhs.uk/conditions/high-blood-sugar-hyperglycaemia/>
2. https://www.diabetes.co.uk/diabetes_care/blood-sugar-level-ranges.html