

Name of the test

Insulin

What is this test used for?

Insulin is a hormone produced by beta cells in the pancreas. It is essential for regulating glucose levels in the blood – insulin transports blood glucose to the cells. Glucose, on the other hand, is the main source of energy for the body.

After food ingestion, glucose levels in the blood rise. In response to high glucose levels, insulin is released from pancreas. Insulin forces cells to take up glucose and this decreases glucose level in the blood. When glucose levels are decreased, release of insulin is decreased as well.

Blood glucose levels remain high if the body does not produce enough insulin (type 1 diabetes) or if the cells are resistant to insulin effects (type 2 diabetes). High glucose levels in the blood may lead to various disorders and complications. Despite its high levels in the blood, glucose cannot enter most cells without insulin, so they are deprived of the main source of energy.

Insulin resistance is also seen with polycystic ovarian syndrome (PCOS) and several other conditions.

Hyperinsulinemia is a condition, when the body produces excess amount of insulin.

Hyperinsulinemia may be seen in patients with insulin resistance (including type 2 diabetes), with excess amount of injected insulin, insulinomas (tumors of pancreas islet cells). High levels of insulin can be dangerous; it leads to decreasing glucose levels in the blood, which in turn causes symptoms like sweating, palpitations, dizziness, fainting. Extremely elevated levels of insulin can even lead to death.

This test measures the amount of insulin in the blood.

When is the test ordered?

Insulin test may be performed:

- to determine the cause of low levels of glucose in the blood
- to evaluate insulin production in patients with diabetes
- to diagnose an insulinoma and monitor insulin levels after tumor removal
- when insulin resistance is suspected

Insulin test is often ordered along with other tests, such as, glucose and C-peptide tests.

How is this test performed?

A blood sample is taken from a vein.

How to prepare for the test

In most cases, fasting is required. It is essential to consult with a doctor and get detailed instructions on how to prepare for the test.

Interpretation of results

Test results must be interpreted by a doctor.

Generally, elevated insulin levels are seen in patients with type 2 diabetes, other conditions that cause insulin resistance, obesity, insulinoma, Cushing syndrome, acromegaly. Decreased levels of insulin are seen in patients with type 1 diabetes, hypopituitarism, some pancreas disorders.

It is important to take the results of other tests into account. For example, if insulin levels are high and glucose levels are normal or elevated, then this may be due to insulin resistance; while if level of insulin is high and glucose level is decreased, this may be due to excess production of insulin.