

Insulin Porcine

Product Data Sheet

Type:	Cat. No.:	
Source: Porcine Pancreas	RP1764680025	(25 mg)
Species: Porcine	RP1764680250	(250 mg)
	RP1764681000	(1 g)

Description

Insulin Porcine is a two chain, glycosylated polypeptide chain containing 51 amino acids and having a molecular mass of 5733 Dalton. The alpha and beta chains are joined by two interchain disulfide bonds. The alpha chain contains an intrachain disulfide bond. Insulin regulates the cellular uptake, utilization, and storage of glucose, amino acids, and fatty acids and inhibits the breakdown of glycogen, protein, and fat. Insulin Porcine is purified by proprietary chromatographic techniques

Introduction to the Molecule

Insulin, a polypeptide hormone with a molecular weight of 5800 Da, is secreted by the beta cells of the islets of Langerhans from the pancreas. Insulin possesses a wide spectrum of biological actions. It stimulates cellular glucose uptake, glucose oxidation, glycogenesis, lipogenesis, proteogenesis and the formation of DNA and RNA. Insulin plays a key role in the regulation of plasma glucose levels (hepatic output inhibition, stimulation of peripheral glucose utilisation). The resulting hypoglycemic effects of insulin are counterbalanced by hormones with hyperglycemic effects (glucagon, growth hormone, cortisol, epinephrin). Insulin secretion is mainly controlled by the plasma glucose levels : hyperglycemia induces a prompt and important increase in circulating insulin levels. Neural influences, as well as various metabolic and hormonal factors (amino acids, glucagon, gastrointestinal hormone) also participate to the control of insulin secretion. Type I (insulin dependent : "juvenile") diabetes is due to a destruction of the beta cells, with a consequence of absolute lack of insulin. In type II (noninsulin-dependent : "maturity onset") diabetes, insulin resistance may play an important role; however after several years of evolution, beta-cells failure may occur, leading to a relative insulinopenia requiring, in some cases, insulin administration. Insulin resistance is associated with high circulation levels of the hormone. The most common case of insulin resistance is represented by obesity. Various endocrinopathies (acromegaly, Cushing syndrome) as well as rare cases of insulin receptor defects or cases with anti-insulin receptor antibodies are associated with glucose intolerance or even diabetes due to insulin resistance. The determination of plasma insulin levels is an important parameter in the diagnosis of hypoglycemia. Insulin levels are high in cases of insulinoma (beta-cell tumor). Functional postprandial hypoglycemia may also be associated with inappropriate insulin release to carbohydrate intake. Insulin levels are determined either in the fasting state or during dynamic test :

- stimulation test : carbohydrate rich meal, oral glucose tolerance test (OGTT), arginin infusion, tolbutamide or other sulfonylureas administration.
- inhibition test : fasting, somatostatine infusion

Clinical application of insulin determination

- Determination of the beta-cell reserve during glucose tolerance test or after a carbohydrate rich meal, as a guide for the instauration of insulin therapy;
- Contribution to the diagnosis of insulin and non-insulin-dependent diabetes;
- Characterisation and follow-up of states of glucose intolerance;
- Diagnosis and study of cases of insulin resistance;
- Diagnosis of insulinoma and other causes of hypoglycemia.

Research topic

Diabetology - Insulin, C-Peptide, Proinsulin, Energy metabolism and body weight regulation

Source

Porcine Pancreas

Purity

Greater than 98.0% as determined by: (a) Analysis by RP-HPLC. (b) Analysis by SDS-PAGE.

Biological Activity

26 units/mg.

Formulation

The Insulin Porcine was lyophilized from a concentrated (1mg/ml) solution with no additives.

Shipping

At ambient temperature. Upon receipt, store the product at the temperature recommended below.

Storage, Stability/Shelf Life

Lyophilized Insulin Porcine although stable at room temperature for 3 weeks, should be stored desiccated below -18°C. Upon reconstitution Insulin Porcine should be stored at 4°C between 2-7 days and for future use below -18°C. For long term storage it is recommended to add a carrier protein (0.1% HSA or BSA). **Please prevent freeze-thaw cycles.**

Physical Appearance

Sterile filtered White lyophilized (freeze-dried) powder.

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