

# How insulin effects digestion



How insulin effects digestion Insulin is a hormone that is produced in specialized cells in the islets of Langerhans, a part of the pancreas. The main role of insulin is to regulate the body's use of sugars and other nutrients. The process is initiated during and immediately after the process of digestion breaks down carbohydrates into sugar molecules (including glucose) and proteins into amino acids. Right after a meal, glucose and amino acids are absorbed directly into the bloodstream, and blood glucose levels rise sharply. The rise in the blood glucose levels signals important cells in the pancreas, called beta cells, to secrete insulin, which pours into the bloodstream. Insulin enables glucose and amino acids to enter cells in the body, particularly muscle and liver cells. Most cells of the body have insulin receptors which bind the insulin to the cell. When a cell has insulin attached to it, the cell then is able to activate the other receptors. These receptors are designed to absorb glucose from the blood stream and direct whether these nutrients will be burned for energy or stored for future use. (The brain and nervous system are not dependent on insulin; they regulate their glucose needs through other mechanisms.) Without insulin, the cells in our bodies would not be able to process the glucose and therefore have no energy for movement, growth, repair, or other functions. Insulin is the access point to unlocking the door of the cell to allow the glucose to be transferred from the bloodstream into the cell. When insulin levels are high, the liver stops producing glucose and stores it in other forms until the body needs it again. As blood glucose levels reach their peak, the pancreas reduces the production of insulin. About 2 to 4 hours after a meal, both blood glucose and insulin are at low levels, with insulin being slightly higher. The blood glucose levels are then referred to as fasting blood glucose concentrations.

(1) There are two types of insulin errors that the pancreas makes. The first is type 1 diabetes in which the pancreas produces no insulin. The second is type 2 diabetes. The pancreas in people with type 2 diabetes does not always produce enough insulin. (1) People with type 1 diabetes experience insulin deficiency; this puts the body in a state of starvation, due to the fact that without insulin body cells can not be easily opened in order to be able to extract the energy contained in the glucose that came from the food that was eaten. (1) People that develop a deficiency of insulin must have it get into the body somehow, normally through shots or pumps. Type 2 diabetes is more common. According to the World Health Organization, over 90% of diabetic cases worldwide are type 2. Type 2 people will develop what is known as insulin resistance. This is not a true insulin deficiency. When this happens the levels of insulin in the blood are similar or even a little higher than in normal, non-diabetic bodies. The body's cells become resistant to the insulin almost like type 1 diabetes, but what happens is that because the body is resistant to insulin the body over secretes insulin in order to try to feed its cells. It can become an ever increasing cycle that can escalate out of control. The main problem with Type 2 diabetes is that the cells respond sluggishly to the insulin and that means the cells cannot absorb the glucose molecules well. This makes blood sugar levels run higher than they should be. When the body can no longer get the energy from the glucose into the cells, the body stores the extra energy in fat cells. This is why diabetics tend to gain weight easily and find it difficult to lose it. Most of the time this condition will correct itself, but sometimes type 2 diabetics will have to have an insulin shot. Based on information from the World Health Organization, some of the effects of type 2 diabetes on the body are blindness and visual

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disability a long with heart disease and diabetic foot disease which often ends in amputation of the lower limbs. Diabetes is also the leading cause of kidney failure. 1) <http://www.free-online-health.com/what-is-insulin.htm> 2) <http://health.howstuffworks.com/insulin.htm>. Retrieved: 11 Sept. 2007