

Understanding Type 2 diabetes

Type 2 diabetes is a disease, which is caused by an imbalance of the glucose utilization hormone called Insulin. The breakdown of carbohydrate sugars in the digestive tract produces glucose which is absorbed into the blood. If one consumes highly refined carbohydrates such as sugars and refined wheat flour products, he/ she will have high blood glucose levels. The high blood glucose levels increase the demand for Insulin. Abnormally high insulin levels lead to insulin resistance. The insulin resistance means that insulin cannot do its regular work of using up glucose for making energy. Insulin resistance is at the root of serious diseases such as obesity, Type 2 diabetes, and heart disease.

To understand Type 2 diabetes, one has to know:

1. What is Glucose, what does it do in the body?
2. What is insulin and how does it work in the body?
3. Finally, what is Insulin resistance and how it causes Type 2 diabetes?

What is Glucose, what does it do in the body?

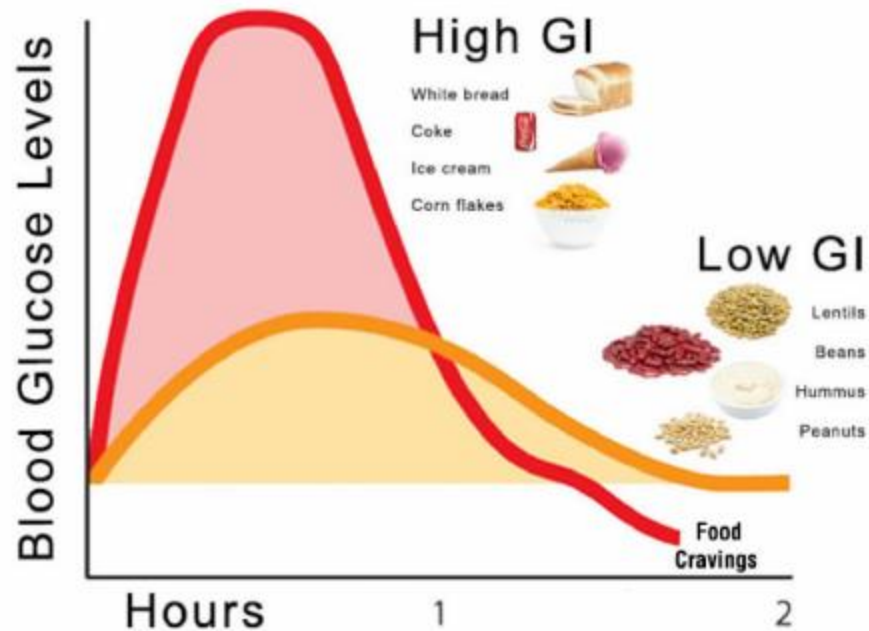
Trillions of the body cells need the energy to function. The primary source of energy in the body is glucose. If enough glucose is not present in the body for energy, the body breaks down fats first and then muscle proteins for energy.

The usual source of glucose in the body is carbohydrates in the food. These are broken down into the glucose in the digestive tract. There are two kinds of carbohydrates— healthy low glycemic and unhealthy high glycemic carbohydrates. The holistic foods comprising of vegetables, fruits, whole grains, lentils, and legumes contain very healthy low glycemic carbohydrates. These are broken down slowly in the digestive tract into the glucose. The glucose blood levels after consuming these foods are low and sustained over 4– 6 hours. The foods rich in refined sugars and refined wheat flour, on the other hand, are high glycemic. These are broken down rapidly in the digestive tract and produce high levels of glucose in the blood. High glucose levels increase the demand for insulin. The high insulin levels bring down the blood glucose levels rapidly within 1– 2 hours of food intake. The low blood glucose levels, which follow high glycemic foods cause excessive hunger, food cravings, and overeating.

Low Glycemic Carbohydrate Foods



Blood glucose levels High Vs. low glycemic foods



What is Insulin and what does it do in the body?

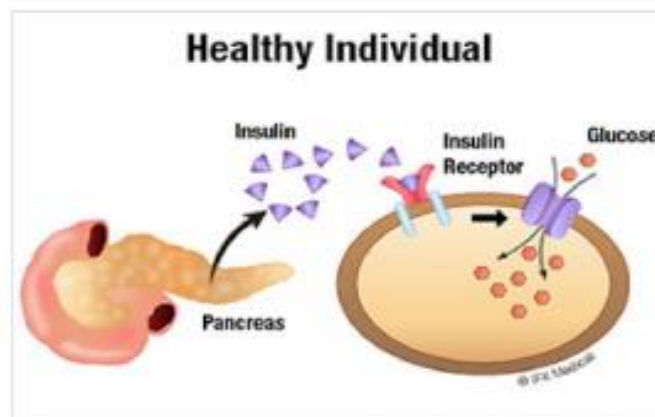
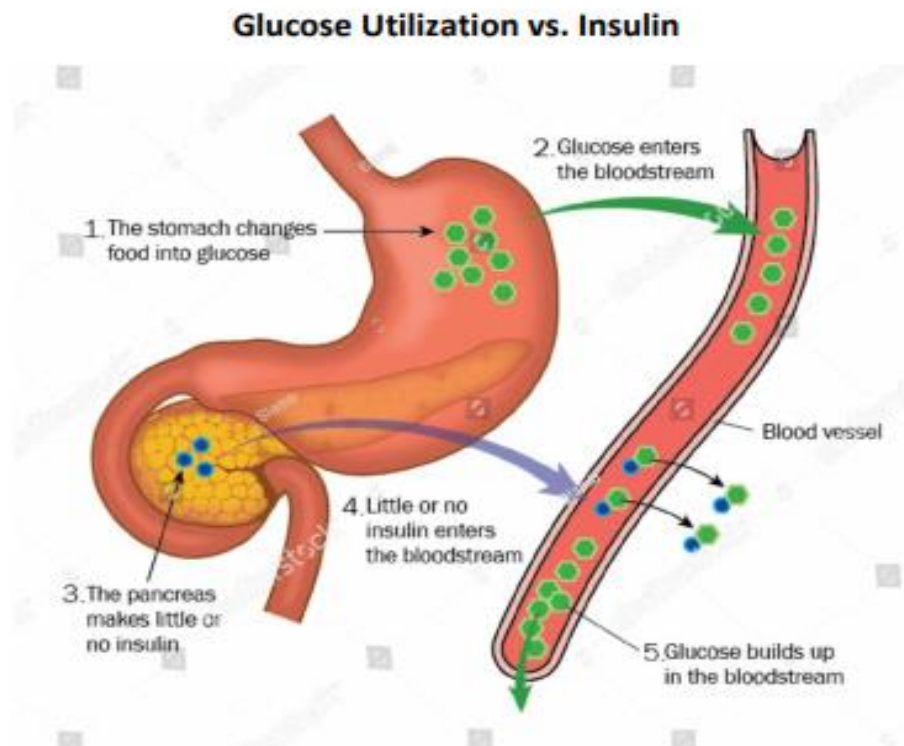
Insulin is produced in the body by the beta cells of the pancreas gland. The pancreas gland lies in the abdomen behind the stomach. Insulin is an essential hormone without which body cannot survive for more than a few days.

Insulin has two functions in the body:

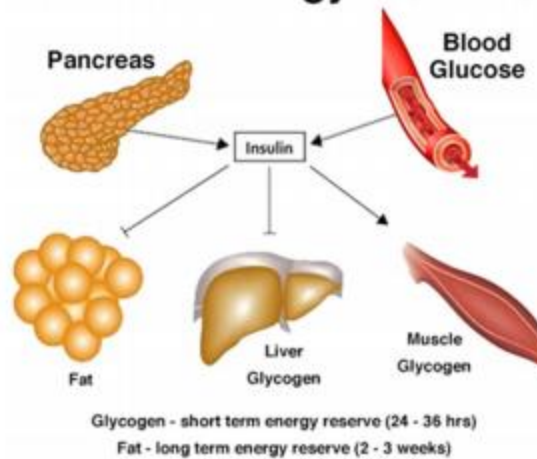
a) Insulin helps the glucose enter the cells for energy synthesis. It does so by attaching itself to the cell surface as the key fits into the lock. When insulin opens the lock, the glucose can get into the cell. Once inside the cell, the glucose is broken down to make energy with the help of oxygen and many other essential nutrients. This energy is critical for the survival of the cells.

b) Insulin converts excess of glucose left over in the blood into reserve energy. There are two energy reserves in the body –Glycogen, and Fats.

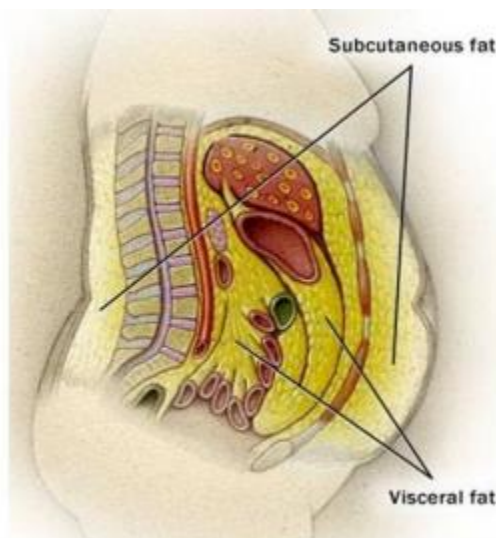
o Glycogen –Glycogen is a short-term energy reserve stored in the muscles and liver. The glycogen stores in the body are limited and are used up entirely when a person fasts for 24– 36 hours. During regular nighttime fasting hours, glycogen is broken down to glucose and serves as a backup energy source. Glycogen reserves in the muscles, serve as a backup glucose energy source when there is sudden muscle activity. Glycogen is like money in the wallet, which can be used up quickly in time of need.



Glucose energy reserves



o Fat— The additional glucose in the blood is converted by insulin into the fat. Fat reserves are the long-term reserves. These sustain the energy requirement of the body during the long periods of starvation. The survival mechanism of fat storage in humans evolved because pre-agrarian humans did not have a consistent supply of food. The affluent modern human has an unlimited amount of ready to eat sugary foods. The excess glucose from the sugary foods gets converted to fat by insulin. Unfortunately, the body has unlimited capacity to store fat. The liver is the first organ in the body where the fat collects (fatty liver). Next, the fat accumulates around the abdominal organs, muscles and finally under the skin. This unlimited capacity of the body to store fat is the reason why there is no limit to gaining weight in obesity. Fat reserve in the body is like money in the bank unless you make an effort to draw it, you cannot use it. To draw out the stored fat energy, one has to eliminate high glycemic carbohydrates from the diet or do regular fasting. That forces the body to dip into the fat reserves for energy and use these up. The fastest way to get rid of excess fat in the body is regular fasting.

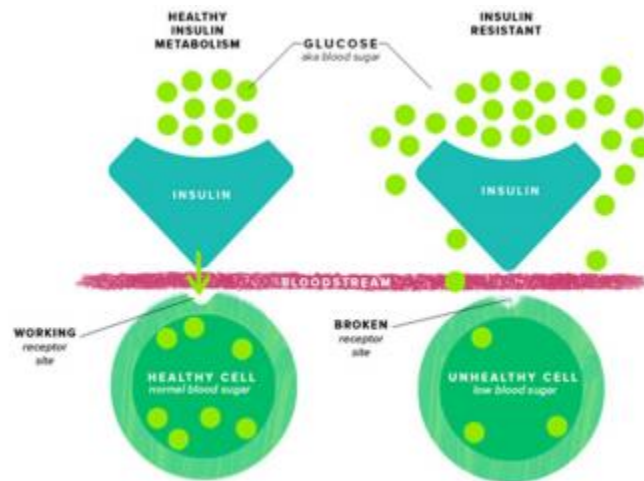


To summarize, one can understand from the above explanation that the food-related excess of glucose in the blood causes both obesity and Type 2 diabetes. These two diseases are like twins –Diabetes.

“The recent medical research supports that eating excess sugar and refined wheat flour product causes both obesity as well as Type 2 diabetes. Eating healthy fat is not the cause of these two diseases as has been commonly believed.”

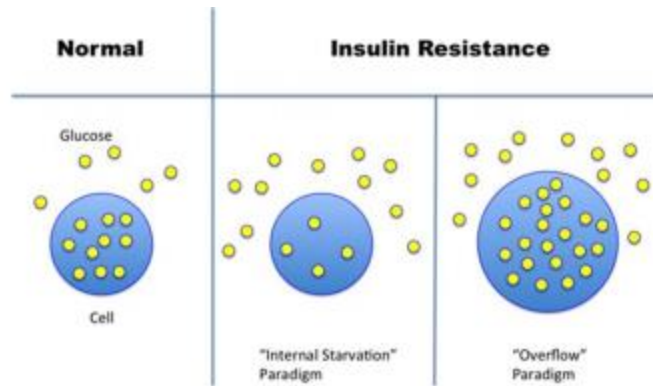
What is Insulin resistance and what does it do?

The high blood glucose results from eating high glycemic foods which increase the insulin demand. When high Insulin and high glucose levels occur in the blood, a big load of glucose gets forced on the body cells. The excess glucose is damaging to the cells because it works the cell to the point of exhaustion. To minimize the glucose-induced damage to the cell, the body's defense mechanism of Insulin resistance kicks in.



Insulin resistance means the insulin receptors on the cell have shut down to stop excessive glucose from entering into the cell. This protective mechanism to save the cells from glucose damage goes overboard. The cells start getting less glucose than what they normally need. The insulin resistance has two undesirable effects:

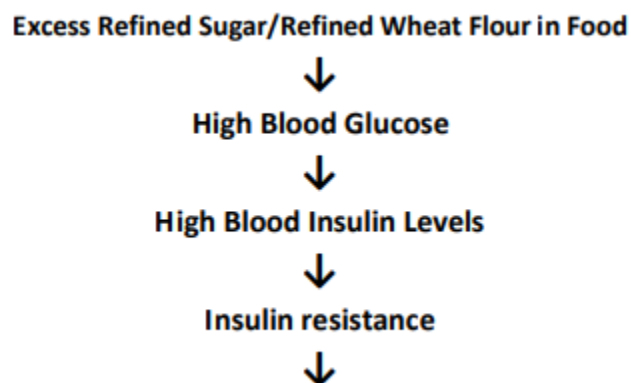
- The less glucose reaching the cells means cells are starving for glucose energy. The brain cells in the starvation mode, cause food cravings and excessive appetite. These are signs of insulin resistance, which occur at the early stage of Type 2 diabetes.

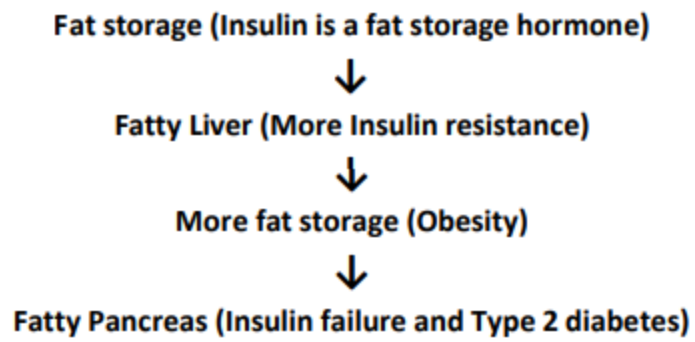


- Excessive fat synthesis - Less glucose entering the cells means lot more glucose is left over in the blood. This excess glucose is converted into fat by the insulin. In essence, insulin is a fat storage hormone. The diabetes experts know this fact well. When they put a patient on insulin injection, the patient quickly starts gaining weight. More the insulin patient injects, fatter he/she gets.

“The Insulin resistance is the starting dysfunction, which eventually leads to obesity followed by Type 2 diabetes. Obesity and diabetes are the twin diseases- Diabetesity.”

Obesity and Type 2 diabetes both have been blamed wrongly on excessive fat consumption. The real culprit, however, is glucose from the sugars which cause an excess of the hormone insulin in the body. The sequence of events which leads to Diabetesity are as follows:





Insulin Resistance & Fat Storage cycle

