

# The Liver & Blood Sugar

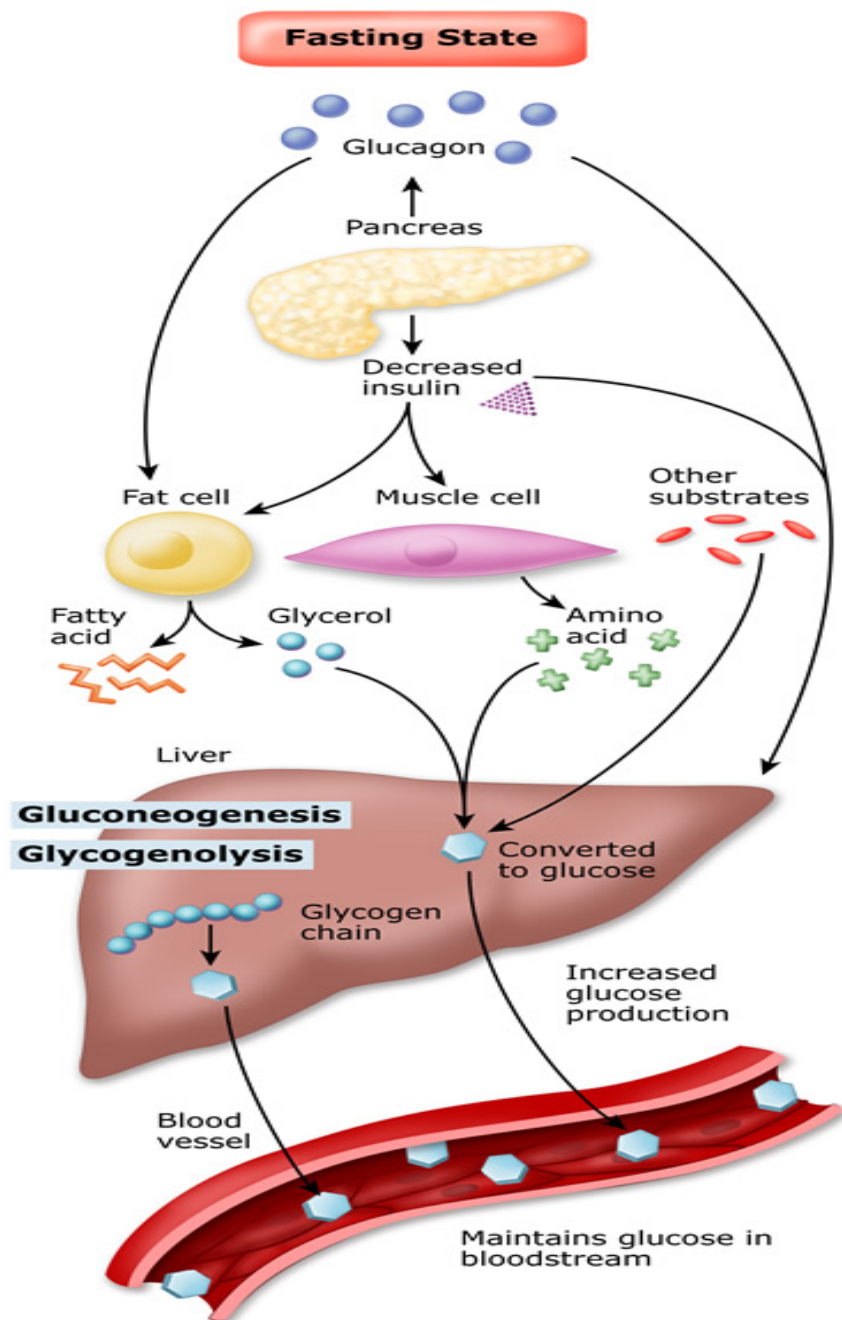
During a meal, your liver stores sugar for later.

When you're not eating, the liver supplies sugar by turning glycogen into glucose in a process called glycogenolysis.

The liver both stores and produces sugar...

The liver acts as the body's glucose (or fuel) reservoir, and helps to keep your circulating blood sugar levels and other body fuels steady and constant. The liver both stores and manufactures glucose depending upon the body's need. The need to store or release glucose is primarily signaled by the hormones insulin and glucagon.

## Glucose Production by Liver During Fasting Conditions (Gluconeogenesis and Glycogenolysis)

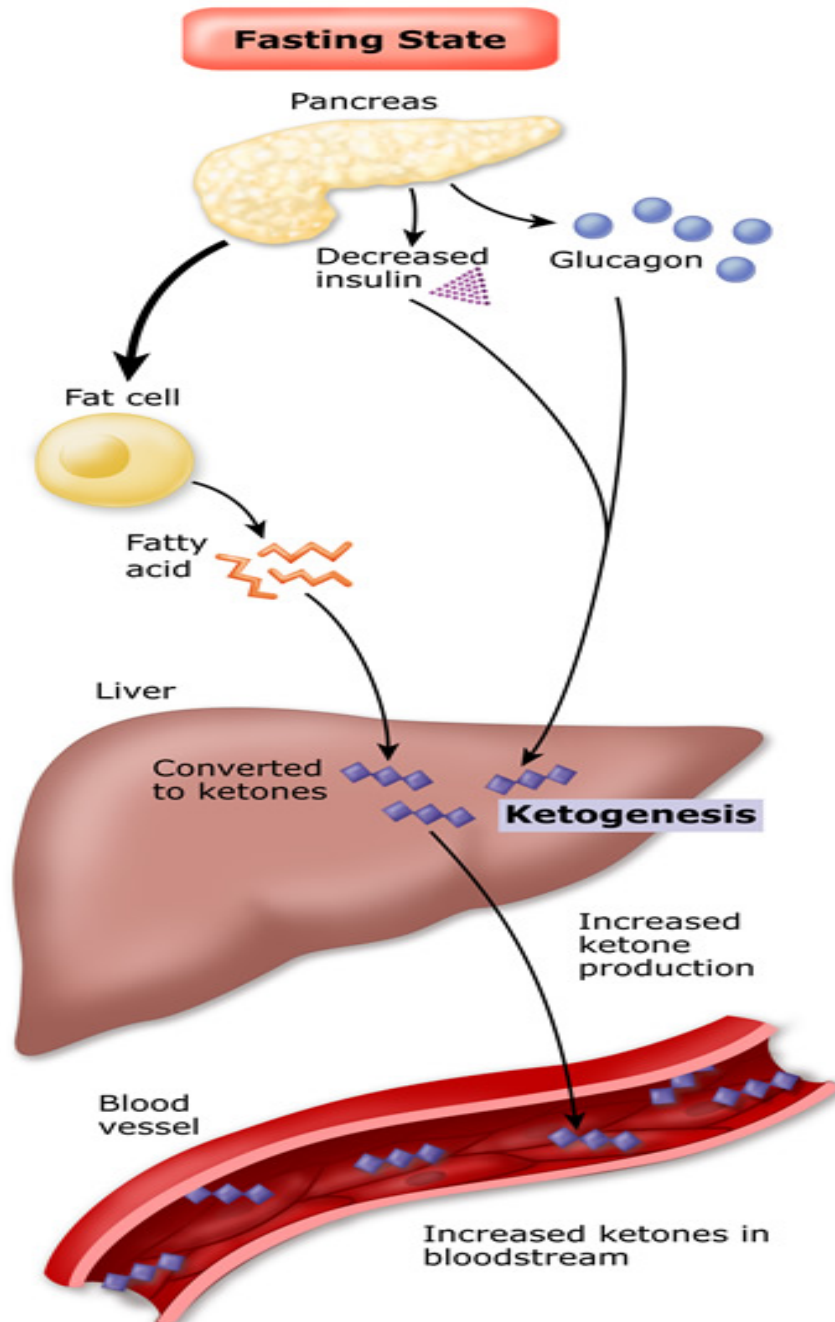


During a meal, your liver will store sugar, or glucose, as glycogen for a later time when your body needs it. The high levels of insulin and suppressed levels of glucagon during a meal promote the storage of glucose as glycogen.

## The liver makes sugar when you need it....

When you're not eating – especially overnight or between meals, the body has to make its own sugar. The liver supplies sugar or glucose by turning glycogen into glucose in a process called **glycogenolysis**. The liver also can manufacture necessary sugar or glucose by harvesting amino acids, waste products and fat byproducts. This process is called **gluconeogenesis**.

### Ketone Production by Liver During Fasting Conditions (Ketosis)



### The liver also makes another fuel, ketones, when sugar is in short supply....

When your body's glycogen storage is running low, the body starts to conserve the sugar supplies for the organs that always require sugar. These include: the brain, red blood cells and parts of the kidney. To supplement the limited sugar supply, the liver makes alternative fuels called ketones from fats. This process is called **Ketogenesis**. The hormone signal for ketogenesis to begin is a low level of insulin. Ketones are burned as fuel by muscle and other body organs. And the sugar is saved for the organs that need it.

The terms “gluconeogenesis, glycogenolysis and ketogenesis” may seem like complicated concepts or words on a biology test. Take a moment to review the definitions and illustrations above. When you have diabetes, these processes can be thrown off balance, and if you fully understand what is happening, you can take steps to fix the problem.

**It is important for individuals with Type II diabetes to understand these concepts, because some of the high morning blood sugars commonly seen in type 2 diabetes are a result of excessive gluconeogenesis overnight. Too much ketone formation is a less common problem, but can be dangerous, and needs emergency medical attention.**



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