**Carbohydrates**

* primary source of **\_\_\_\_\_\_\_\_\_**for the body (along with protein and fat)
* All carbohydrates are broken down into small molecules of **\_\_\_\_\_\_\_\_\_\_\_**.
* Glucose can then be **\_\_\_\_\_\_\_\_\_\_\_\_\_\_** and **\_\_\_\_\_\_\_\_\_\_\_\_.**
* Glucose is a primary fuel that drives the **\_\_\_\_\_\_\_\_\_\_\_\_** and function of every cell in the body to produce energy for cellular functions in the form of ATP.

1) used **\_\_\_\_\_\_\_\_\_\_\_\_** for energy,

2) stored as **\_\_\_\_\_\_\_\_\_\_\_\_** in the liver and muscles for easy access,

3) turned into \_\_\_\_\_\_\_\_\_\_\_\_ for **longer-term** storage.

* Except in starvation situations, carbs are your **\_\_\_\_\_\_\_\_**only fuel source.
  + **\_\_\_\_\_\_\_\_\_\_\_** depend almost **entirely** on glucose for ATP synthesis
  + **\_\_\_\_\_\_\_\_\_\_\_\_**glucose as glycogen as liver and muscle cells do.
  + therefore need a **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**supply in the blood.

**Carbohydrate metabolism**

**Digestion:** The two digestible carbohydrates are starches and sugars, are digested, or broken down into their most elementary form, along the gastrointestinal tract:

Mouth: **\_\_\_\_\_\_\_\_\_\_\_\_\_\_**digestion

Mouth: starch + H2O ------> maltose (disaccharide)

Salivary amylase

Small intestine: starch +H2O --------> maltose

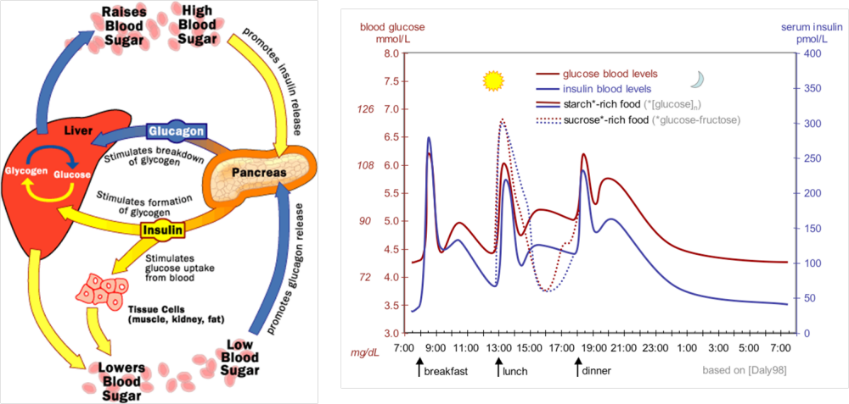
Pancreatic amylase

Small Intestine: maltose + H2O ----------> glucose + glucose

Maltase

* Glucose **\_\_\_\_\_\_\_\_\_\_\_\_** into blood stream.
* Used by **\_\_\_\_\_\_\_\_\_\_\_\_** for various functions
* **\_\_\_\_\_\_\_\_\_\_\_\_\_** glucose stored as **\_\_\_\_\_\_\_\_\_\_\_\_\_\_**by liver

**Regulation:**

**Insulin** -secreted by **\_\_\_\_\_\_\_\_** when blood glucose **\_\_\_\_\_\_\_\_**, signals **\_\_\_\_\_\_** to absorb glucose and **\_\_\_\_\_\_\_\_** to store glucose as glycogen when there is too much glucose in the blood.

**Glucagon** -secreted by **\_\_\_\_\_\_\_** when the blood glucose falls too low; needed for body fat to be burned as energy; causes the liver to **\_\_\_\_\_\_\_\_\_\_\_** stored glycogen into glucose, which is released into the bloodstream.

**Epinephrine**- secreted by adrenal glands and causes the liver to \_\_\_\_\_\_\_\_\_\_\_ glucose for upcoming threat.

**Hypoglycemia**

* blood glucose concentration drops **\_\_\_\_\_\_\_\_\_\_\_** normal
* Can be caused by:
  + **\_\_\_\_\_\_\_\_\_\_\_\_\_**
  + **Not \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** carbohydrates
  + **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** or delaying a meal
  + Increasing **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**
  + Being **\_\_\_\_\_\_\_\_\_\_\_\_**
  + Drinking **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** without enough food
  + Alcohol makes it harder for your body to keep your blood glucose level steady, especially if you haven’t eaten in a while. The effects of alcohol can also keep you from feeling the symptoms of hypoglycemia, which may lead to severe hypoglycemia.
* signs and symptoms mostly affect the \_\_\_\_\_\_\_\_\_: dizziness, confusion, irritability, etc.
* Other signs and symptoms are related to the activation of the stress (\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_) response... sweating, skin pallor, increased HR, etc.

**Hyperglycemia:**

* an **\_\_\_\_\_\_\_\_\_\_\_\_\_** of glucose in the bloodstream,
  + often associated with diabetes mellitus
* either your body doesn't make **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** or
* it **\_\_\_\_\_\_\_\_\_\_\_\_\_** the insulin it does produce
* cells can't take in the glucose so it **\_\_\_\_\_\_\_\_\_\_\_\_\_\_** in your blood.
* high levels of blood glucose can cause damage to the tiny blood vessels in kidneys, heart, eyes, or nervous system.
* untreated, diabetes can eventually cause **\_\_\_\_\_\_\_\_\_\_\_\_\_\_**, stroke, kidney disease, blindness, and nerve damage to nerves in the feet.

**Eating too many carbs:**

If insulin is working and blood glucose remains high, system is overloaded with potential energy it can’t use and is stored as fat 🡪 **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**.

**Overproduction of insulin** can predispose you to:

* **lowered immunity**,
* **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**,
* **type 2 diabetes**,
* **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** and
* hypertension.
* Also raises oxidation rates, which can make you more susceptible to premature **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**.

**“Good” Carbs:**

* break down **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** (due to more complex molecular structures and more dietary fiber) release glucose into the bloodstream gradually

**“Bad” carbs**

* abruptly **\_\_\_\_\_\_\_\_\_\_\_\_\_\_** blood-glucose levels and leave you craving more.
* contain fuel your body can’t currently use.
* may contain added fats, sugars or chemicals.

Type 1 diabetes: the beta cells are destroyed by the body's own immune system.

Type 2 diabetes: cells are resistant to insulin, not enough insulin produced to compensate.