

# FROM FOOD TO NUTRIENTS

→ Digestion is the process which transforms complex food into simple nutrients.

## **NOTE!!!**

- The mechanical digestion (M.D) of the starch begins in the mouth.
- The chemical digestion (C.D) of the starch also starts in the mouth due to the presence of salivary amylase enzyme.
- The mechanical digestion (M.D) of proteins begins in the mouth by mastication (Chewing).
- The chemical digestion (C.D) of proteins starts in the stomach and ends in the small intestine.
- Pancreatic extract = pancreatic juice

Contains digestive enzymes that act on proteins (Protease)

Pepsin and Trypsin

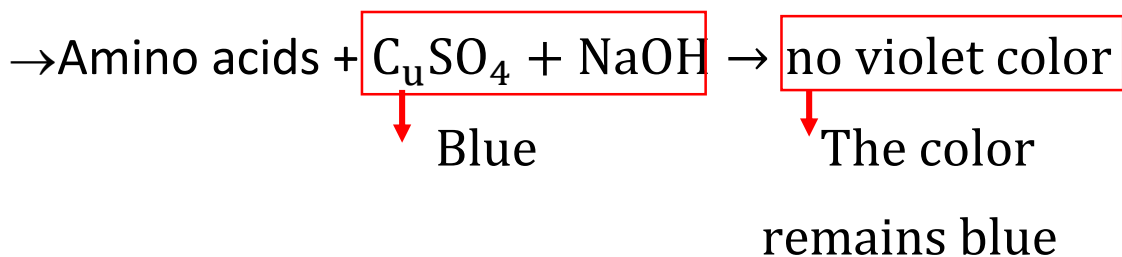
How can you detect, without performing a test or an experiment, that digestion took place in the test tube?

By observing that the coagulated egg white disappeared. Which indicates it was transformed into simple nutrients.

How can you experimentally verify that digestion took place?

By performing biuret test, which will give a negative result (no violet color) indicating that protein is absent which means that there was digestion of proteins into amino acids.

**NOTE!!!**



→ Molecular simplification of proteins:

Proteins → amino acids (nutrients)

→ Lipase is a digestive enzyme found in pancreatic juice and can't digest lipids or fats.

Lipids → fatty acids + glycerol  
↓  
Lipase bile

### Bile:

✓ **Definition:** a green colored liquid secreted from the liver and stored inside the gall bladder. It is released in the small intestine.

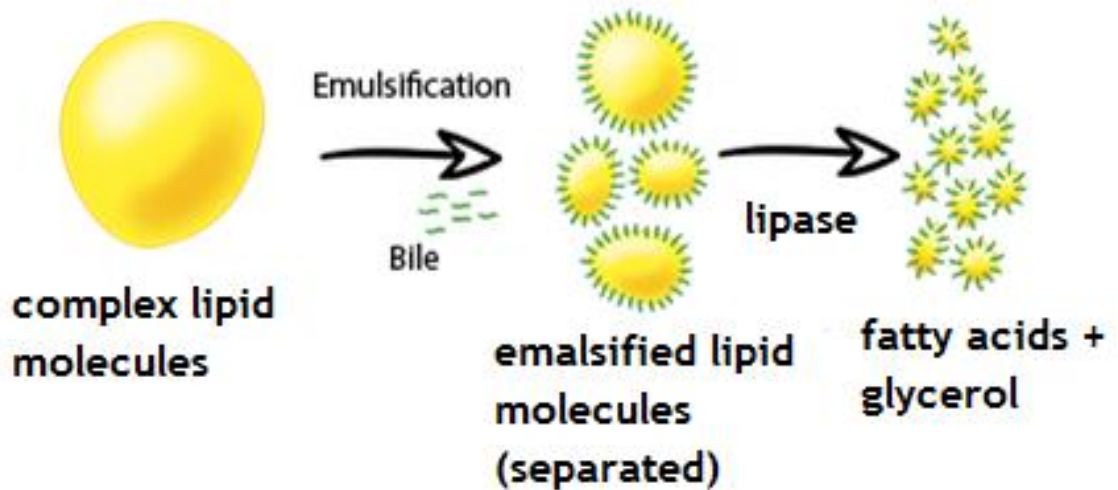
✓ **Role of bile:**

- Makes the medium basic.
- Emulsifies (spreads) the fat molecules in order to facilitate their digestion by lipase.

### **NOTE!!**

Bile doesn't contain an enzyme; it only emulsifies by spreading lipid molecules away from each other. Lipase is the enzyme that digests lipids.

Title: a schematic diagram illustrating the action of bile and lipase on lipids.



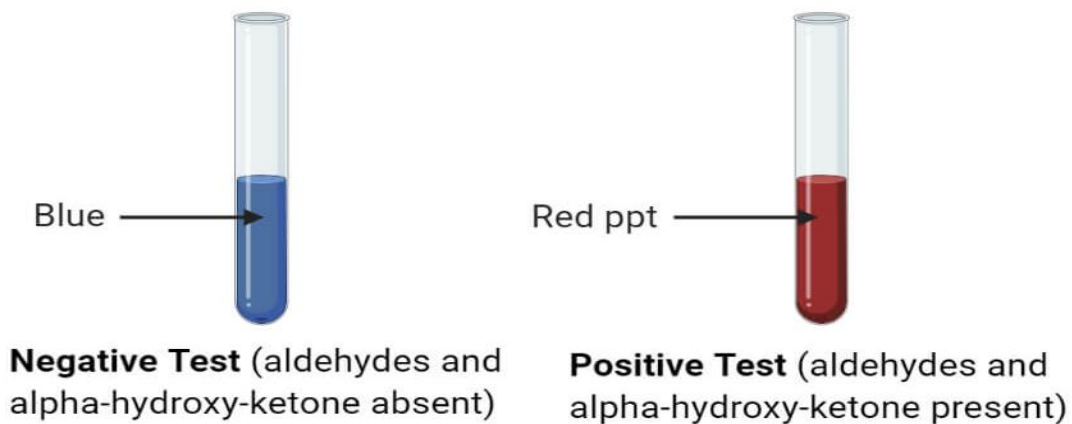
Title: schematic diagram illustrating the invetro digestion of maltose by the enzyme maltase which is found in the intestinal juice.



→ How to identify the presence of glucose?

There are 2 ways to identify the presence of glucose:

1. By performing **Fehling test**, which h will give a **red brick precipitate** indicating the presence of reducing sugar (glucose).



2. By using **glucose test strip**, which changes color in the presence of glucose.

- ✓ If the color is **purple or dark violet (blue)**, this indicates that glucose is **present**.
- ✓ If the color remains **light orange**, the glucose is **absent**

→Fate of the digested food:

They are absorbed from the small intestine into the blood.

→Fate of the undigested food:

It reaches the large intestine where it will be eliminated to the outside of the body as stool or wastes through the anus.