Digestion of food

Process of digestion

The digestive system breaks down the foods we eat into their simplest form:

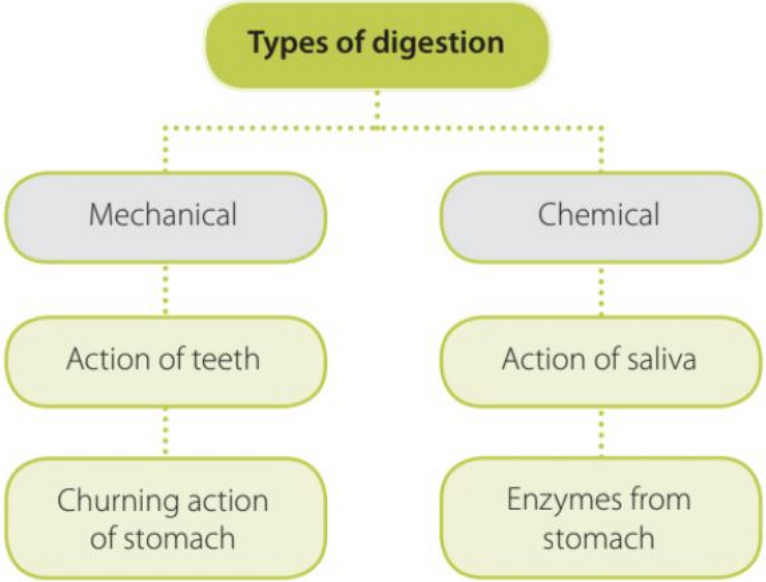
- Carbohydrates → sugars
- Protein → amino acids
- Fats → fatty acids

The digestive system is like a long tube with digestive organs attached along the way, beginning at the mouth and ending at the rectum. The process of digestion can take between 24-72 hours.

Types of digestion

There are 2 types of digestion; mechanical and chemical.

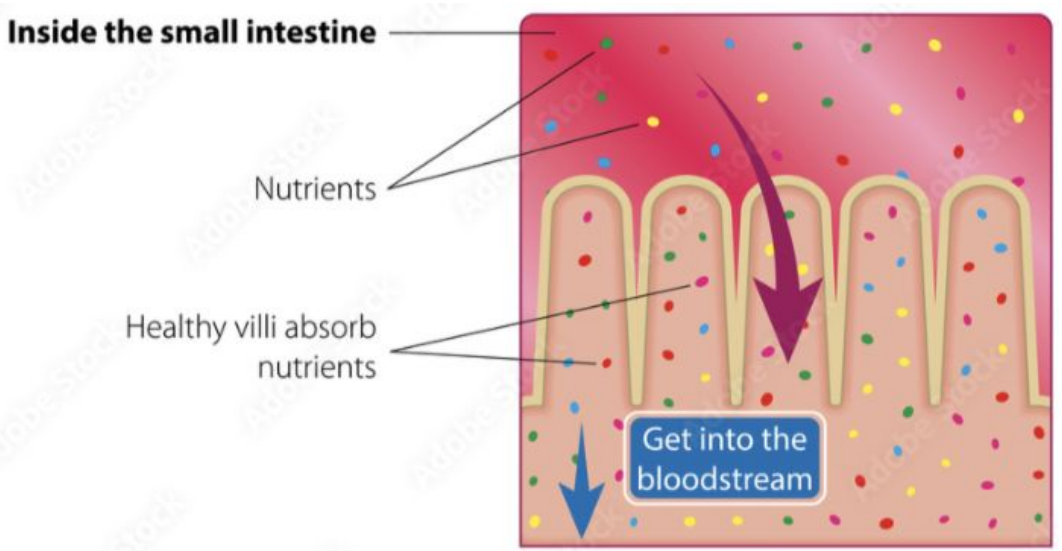
1. **Mechanical digestion:** occurs when food is chewed and broken down
2. **Chemical digestion:** occurs when enzymes break down food into nutrients



Absorption of nutrients

Most nutrients are absorbed in the small intestine. The small intestine consists of villi, which are tiny projections that line the inside of the small intestine. They have a large surface area, allowing nutrients to pass through either the bloodstream or lymphatic system.

Everything is absorbed into the bloodstream except lipids. Lipids pass into the lymphatic system.



Activity 1

Metabolism

Metabolism refers to the speed that food is broken down and used by the body. It regulates the amount of kilojoules that the body burns at any time. Everyone has a different rate of metabolism and it can be affected by factors such as age, height, activity level and genetics

Components of metabolism

1. Catabolism - the breakdown of components of foods into their nutrients to produce energy (complex to simple)
    - Eg. the digestion of carbohydrates (complex) to glucose (simple)
2. Anabolism - the energy stored in fat cells or used to build and repair body cells (simple to complex).
    - Eg. building up amino acids (simple) into proteins to make muscle (complex)

Activity 2

Type of metabolic rate	Description	Contribution to daily energy use
Basal metabolic rate (BMR)	Amount of energy (kilojoules) used at rest	50–80%
Energy used during physical activity	Amount of energy (kilojoules) used during exercise and activity	20% (in a normally active person)
Thermic effect of food	Amount of energy (kilojoules) used to eat, digest and metabolise food	5–10%

Review questions

1. List what the following nutrients are digested into:
    a. Carbohydrates
    b. Proteins
    c. Fats
2. At which stage does absorption take place?
3. Describe what happens to food that is not digested.
4. Define metabolism