



শিক্ষাৰ্থকোষৰ আৰু নৱশিক্ষাৰ্থকোষ (আৰু)

**DEPARTMENT OF EDUCATION (S)**

Government of Manipur

## CHAPTER-10

### RESPIRATION IN ORGANISMS

#### NOTES

- **Respiration:** It is essential for survival of living organisms. It releases energy from the food. The oxygen we inhale is used to breakdown glucose into  $\text{CO}_2$  and water. Energy is released in the process. This energy is necessary for various life activities. Oxygen is required for this process and  $\text{CO}_2$  is formed as a waste.

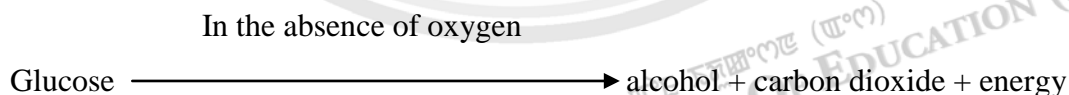
- **Respiration consists of:** i) Cellular respiration ii) Breathing

- **Cellular respiration:** The process of breakdown of food in the cell with the release of energy. Cellular respiration takes place in the cells of all organisms. Two types: i) aerobic respiration and ii) Anaerobic respiration

- **Aerobic Respiration:** The process of cellular respiration in which breakdown of glucose occurs in presence of oxygen is called aerobic respiration. In this process food (glucose) is broken down into carbon dioxide, water and energy. E.g.- Human cell



- **Anaerobic Respiration:** The process of cellular respiration in which breakdown of glucose occurs in absence of oxygen is called anaerobic respiration. In this process food (glucose) is broken down into alcohol, carbon dioxide and energy. E.g. Yeast



- **Breathing:** Taking in air rich in oxygen and giving out air rich in  $\text{CO}_2$  with the help of respiratory organs. Two types: i) inhalation and ii) Exhalation
- **Breathing Rate:** A breathe means one inhalation and one exhalation. The number of times a person breathes in a minute is called as breathing rate.

- **Nasal cavity:** a large air filled space above and behind the nose in the middle of the face. It is inside the nose. It is lined with a mucous membrane that helps keep nose moist by making mucus so you won't get nose bleeds from a dry nose.
  - **Chest cavity:** also known as thoracic cavity. It is the second largest hollow space of the body. It is enclosed by the ribs, the vertebral column, and sternum (breastbone), and is separated from the abdominal cavity (the body's largest hollow space) by a muscular and membranes partition, the diaphragm.
  - **Lungs:** a pair of spongy, air filled organs located on either side of the chest. The lungs are the centre organ of the respiratory (breathing) system.
  - The lungs are the primary organs of the respiratory system in humans and many other animals including a few fish and some snails.
  - **Diaphragm:** a thin skeletal muscle that sits at the base of the chest and separates the abdomen from the chest. The diaphragm is the primary muscle used in respiration, which is the process of breathing.
    - This dome shaped muscle is located just below the lungs and heart. It contracts and flattens when we inhale and when we exhale it relaxes and the air is pushed out of the lungs.
  - **Ribs:** forms the rib cage which encloses the chest cavity. It is a set of 12 bones which form the protective cage of the thorax. It protects the internal thoracic organs. During inhalation, the ribs movement increases space in the chest cavity and air rushes into the lungs.
  - **Spiracles and Tracheae:** insects like the cockroach, grasshopper etc. have small openings on the sides of their body. These openings are called spiracles. The spiracles on the body of insects are connected to a network of thin air tubes called tracheae which spread into the whole body of the insects where the exchange of gases takes place.
  - **Earthworm:** They absorb the atmospheric oxygen through their moist and slimy skin.
  - **Gills:** It is the special respiratory organs of fishes.
  - **Respiration in plants:** Plants also respire like other organisms. They take in oxygen from the air and give out carbon dioxide.
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