

Class - VII

Subject - Biology

Chapter - 4.

Photosynthesis and Respiration

Teacher - Ms. Nidhi

Good Morning Children! This lesson is of Class-VII for the subject of Biology Chapter-4, Photosynthesis and Respiration of your textbook titled Concise Biology, Selina Publications. It is being submitted to you on 21.10.2024

Dear students, in your lesson of Photosynthesis and Respiration, today we are going to discuss the process of respiration and the two types of respiration.

Nutrition provides plants and animals with food. However, this food needs to be broken down to release energy, in order to use it for growth and repair of the plant and to carry out other activities like to absorb water and minerals, for root cells to penetrate in the soil. This is where respiration comes into play.

The process by which food or glucose is broken down to release energy is called respiration.

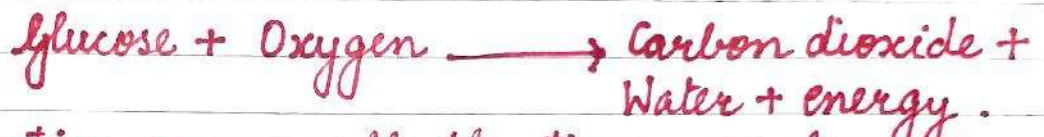
Respiration is not a simple process. It is, infact, a series of chemical reactions to liberate energy. This reaction takes place partly in the cytoplasm of the cell and partly in the cell organelle, mitochondria.

Energy is released in the form of energy

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molecules, ATP (Adenosine Tri-Phosphate)

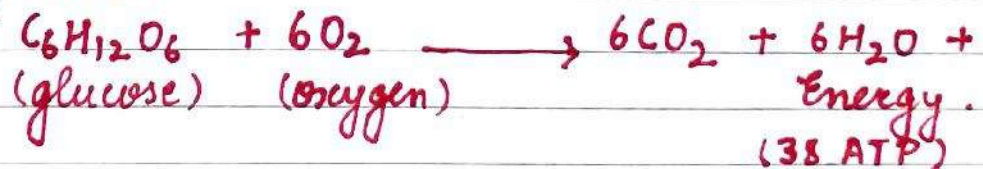
These are the energy currency of the cells, and are used to carry out daily activities.



Respiration occurs all the time, as long as an organism lives. It is taken as an index of life. No respiration means no life.

Further, let us discuss the two types of respiration depending upon the presence or absence of oxygen.

1. **Aerobic respiration**: When the breakdown of glucose takes place in the presence of oxygen, it is called aerobic respiration. In this process, glucose is completely oxidized to produce carbon di-oxide, water and a large amount of energy. 38 molecules of ATP are released from oxidation of each glucose molecule in this process.



Most animals, including human beings and green plants respire aerobically. Such organisms are called aerobes.

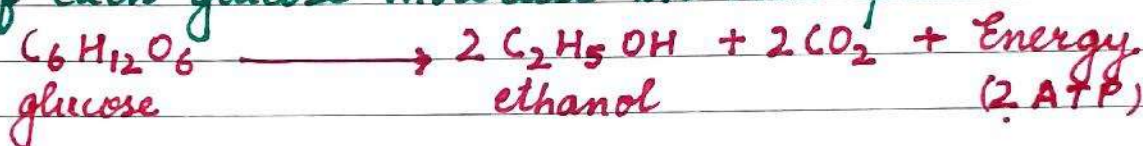
2. **Anaerobic respiration**: When the breakdown of food takes place in the absence of

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oxygen, it is called anaerobic respiration. Due to the absence of oxygen, glucose is not completely oxidized to produce carbon dioxide and water. However, it breaks down into alcohol and carbon dioxide with the release of less amount of energy. Only 2 molecules of ATP are released from oxidation of each glucose molecule in this process.



Anaerobic respiration takes place in certain organisms like yeast and bacteria. These organisms are called anaerobes.

Now children to test yourself write answers to the questions given below.

1. Organisms which respire in the presence of oxygen are called _____.
2. The energy released during respiration is stored in the form of _____.
3. What is the full form of ATP.
4. The minute pores on the surface of leaves are called _____.
5. The end-products of anaerobic respiration are _____.
6. Anaerobic respiration takes place in _____ and _____.
7. When the respiration takes place in the presence of _____ it is called aerobic respiration.

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Pause the audio for 2 minutes and write the answers. 2 minutes are over children now you can cross check your answers

1. Aerobes.
2. ATP
3. Adenosine Tri - Phosphate.
4. stomata
5. ethanol, carbon di-oxide and energy.
6. yeast and bacteria
7. oxygen.

For today, I am ending the topic here. Next time we will do how respiration takes place in plants.

Thankyou children.