

Microorganisms: Friend and Foe

What are Microorganisms?

Microorganisms are living organisms that are very minute to be seen by the naked eye and can be classified into four major groups namely bacteria, fungi, protozoa and some algae. Bacteria are unicellular, while some have well developed, multicellular body like moulds and can survive under different types of climatic environment, ranging from ice cold climate to hot summers and deserts to marshy, muddy lands. Often they are found living inside the bodies of animals including humans, air, water, soil, food and other things.

Classification of Microorganisms

Microorganisms can be classified into various sub groups on the basis of their size and cellularity. In this section we shall discuss each of the sub group:

Virus: Viruses have a unique character as they can be crystallized and stored like some non-living things, such as common salt and sugar and on the other hand they can also multiply like living organisms when they are within a living body.

Bacteria: Bacteria are single celled microorganisms, that come under the plant kingdom because they have rigid definite cell wall like plant cells.

Fungi: Also known as non-green plants, they cannot synthesize their own food and have to be dependent on others for their food. Most fungi take their food from dead organic matter. Some live on other organisms as parasites.

Algae: Algae are green substances floating on the surface of stagnant water and tend to grow on wet surfaces. One remarkable feature is that they are capable of synthesizing their own food.

Protozoa: Unicellular animals, some are free-living, others are parasites. Several parasitic protozoans can cause diseases in human beings, domestic animals and plants. For example, Plasmodium, a protozoan, causes malaria.

Characteristics of Microorganisms

- Commercially used for the large scale production of alcohol, wine and acetic acid (vinegar), microorganisms can be harmful too.
- Some of the microorganisms known as pathogens can cause diseases in humans, plants as well as in animals.
- Some microorganisms are capable of spoiling leather, food and clothing.

Microbial Diseases

Like we discussed microorganisms can be harmful too. Microorganisms are known for causing severe diseases in humans, some of which we have listed below:

- Viruses: Common Ailments: Cold, Cough, and Influenza (or Flu) and Serious Diseases: Polio, Chicken Pox, Measles etc
- Bacteria: Tuberculosis and Typhoid
- Protozoa: Dysentery and Malaria

What is Food Poisoning?

Food poisoning is a result of consumption of food spoiled by some microorganisms that produce substances that are toxic in nature and make the food poisonous and can cause serious illness to living organisms.

Food Preservation— Microorganisms may grow on our food and spoil it. Spoiled food emits bad smell, bad taste and changes colour.

What is Antibody?

Next In the chapter Microorganisms- Friend and Foe, when disease causing microbes enter our body, our internal defensive mechanisms produce antibodies to fight disease causing microbes.

When a disease-carrying microbe enters our healthy body, antibodies are produced by the body, to kill the microbes. The antibodies then remain in the body for a long time to protect us from the disease causing microbes. The substance which is injected into the body to trigger the body to initiate this entire process is called a vaccine.

- Pasteurization- This process was discovered by Louis Pasteur in which milk is heated to 70 degree Celsius for about 15 to 30 seconds and then chilled and stored.
- Nitrogen Cycle-
 - Some bacteria and blue-green algae present in the soil fix nitrogen from the atmosphere and convert it into compounds of nitrogen.
 - Once nitrogen is converted into these usable compounds, it can be utilised by plants from the soil through their root system.
 - When plants and animals die, bacteria and fungi present in the soil convert the nitrogenous wastes into nitrogenous compounds to be used by plants again.
 - Thus due to this Nitrogen Cycle, the percentage of nitrogen in the atmosphere remains more or less constant.