

Unit 4

Microbes



Discuss with your family members and answer the following questions :

1. Has any member of your family got any diseases during last six months ?

2. If the answer is yes, then which was that disease ?

3. Which type of symptoms does he/she had shown during that disease ?

4. Was any household treatment given during that disease ?

5. If your answer is yes, then which type of treatment was given ?

6. Had any doctor treated along with household treatment ?

7. Which types of precautions were advised to be taken by the doctor ?

- Discuss with your friends about the information collected by you.
- 1. Which disease came to your knowledge during the discussion with your friends ?

- 2. Which precautions were advised against that disease ?



With help of your teacher visit a clinic of any doctor. Ask some questions regarding those diseases, their remedies and precautions.

- 1. Which disease are found very frequently ?

- 2. What can be the reasons for those diseases ?

- 3. Which are the main symptoms of each disease ?

- 4. What precautions should be taken to prevent that disease ?

- 5. Which micro-organisms are responsible for that disease ?

- 6. How micro-organisms spreads ?

Name of Disease	Causes	Symptoms	Precautions	Does any micro-organism responsible for that? If yes, than which one?

Thus, you see that many microbes disturb our biological processes. Now, we shall collect more information regarding microbes.

Collect more information from the book 'Health and Hygiene' available in your school library.

There are five types of microorganisms :

1. Fungi
2. Protozoa
3. Bacteria
4. Virus
5. Algae

Fungi :

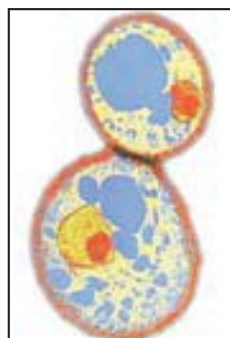
What is required ?

Bread or Roti (Loaf), Plastic bag, Thread, magnifying glass.

What to do ?

- ⇒ Take a piece of bread or roti in a plastic bag and shut the mouth of the bag.
- ⇒ Take piece of bread or roti out of the bag after three to four days and observe it with the help of magnifying glass.
- ⇒ You will find white fibrous structures as well as greenish black spots developed on that piece.
- ⇒ Those white fibres or greenish black spots are of fungus. Fungi show many variations.
- ⇒ During monsoon season fungi is found on the dead materials like roti, pickles, wet clothes, shoes and other leather goods. Fungi may be unicellular or multi cellular.
- ⇒ There are two main types of fungi :
(1) Yeast (2) Mold (Found on bread)

Mushroom is one type of mold. It grows on decaying material and grows in monsoon season in fields and dunghills.



Yeast



Mushroom

Benefits :

- Yeast is useful for the fermentation for the preparations of food like dhokla, idli, dhosa.
- Yeast is also useful in the preparations of bread, biscuit and cake.
- Penicillin is used to prepare antibiotics.
- Fungus like mushroom can be used directly as food.
- Cheese can be made tasteful by using fungus.

Harmful effects of fungi :

- Some fungi produce bad effects to food material.
- The fungus is responsible for the decomposition of leather.
- Ring worm, Itches, Eczema.

Protozoa :

What is required ? A sample of stagnant water, compound microscope, slide, coverslip.

What will you do ?

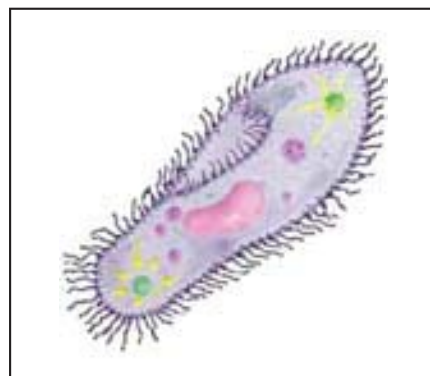
- Observe the sample of stagnant water under compound microscope.

You will find some unicellular organisms in that water moving here and there. They are protozoans.

- Amoeba, paramoecium and plasmodium are the examples of protozoans.
- Shape of Amoeba is indefinite. Locomotion takes place by constantly changing shape of its body.
- Paramoecium is having a definite shape. That shape is slipper like. This organism swims rapidly using the cilia that surround its body.
- Plasmodium is a parasitic protozoan.



Amoeba



Paramoecium

Benefits :

- Useful in scientific research.
- Useful in the study cell division and regeneration.
- Useful as animal's food.
- They can decompose organic matter hence useful for cleaning dirty water and waste.

Harmful effects :

Amoeba is responsible for causing amoebic dysentery.

- Plasmodium is responsible for causing malaria.
- Elephantiasis is also caused by them.

Bacteria :

- ⇒ Can you imagine that how minute structures are the bacteria ?
- ⇒ According to one estimate, total number of bacteria present in a spoon full soil is equal to the total number of human population of the world.
- ⇒ If we think about the environment, bacteria are found everywhere. In air, water, food, soil, in the body of animals as well as on plants.
- ⇒ Thus, bacteria are present in entire environment.

Benefits : In the making of curd and cheese from milk.

- ⇒ It softens the hard muscles.
- ⇒ Helpful to animals to digest plant material.
- ⇒ Decomposition of complex structures into simple nutrients.
- ⇒ Helpful in pretreatment for making leather goods.
- ⇒ Increase the fertility of soil.

Harmful effects : Produces different diseases.

- ⇒ *Vibrio cholera* causes cholera.
- ⇒ Diphtheria is caused by *Coryne bacterium diphtheria*.
- ⇒ T.B. is caused by *Mycrobacterium tuberculosis*.
- ⇒ *Salmonella typhosa* causes typhoid fever.
- ⇒ *Microbacterium leprae* causes Leprosy.
- ⇒ Above all these diseases like tetanus, plague, pneumonia, dysentery like disease are also caused by bacteria.

Virus : We usually believe that bacteria are the smallest organisms. But there are some smaller organisms than bacteria which can enter in to the body of bacteria and kill bacteria. They are virus.. We cannot see virus even with the help of compound microscope. It can be seen only with the help of electron microscope.

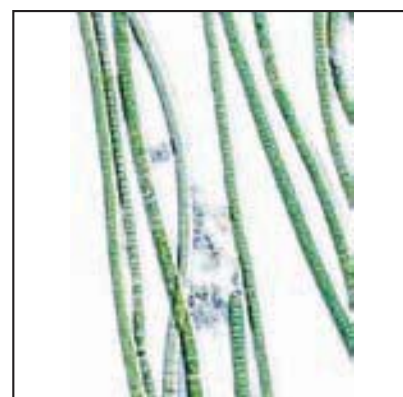
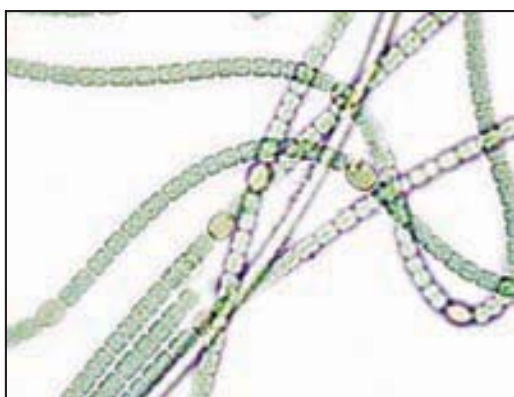
Virus can grow only after entering in any living cell. When they are outside of living cell; they remain inactive and behave as non living, but when they enter any living cells, they become active and behave as a living organism as well as they reproduce to give rise to next generation of virus. Thus, they are called connecting link between dead and living ones.

Harmful effects :

- Virus can cause cold, small pox, chickenpox, jaundice, polio, eye disorders, chicken guinea, swine flu, AIDS, dengue or rabbi (hadakwa). Thus, virus is the biggest enemy of human being.
- Due to vaccination program for chicken pox (shitla), we are able to eliminate the very dangerous disease like chicken pox from the world. Polio movement is running to remove polio from our country.
- Vaccination is actually a bulk of inactivated organism causing the disease. In this inactive form they are introduced in to our body. Due to this, our white blood cell can be prepared to fight against disease in advance hence they can fight in better way particularly against that disease when they actually attack our body. Different vaccines have been developed against different diseases.

Algae :

Algae are found in fresh water, in ocean, in farms, on rocks, on wall etc. They are also found in hot water streams, turbid water as well as on the trunk of trees. Algae may be brown algae. They are unicellular or simple multicellular. Algae contain photosynthetic pigment such as chlorophyll, there for they are autotrophic.

**Algae****Benefits :**

- Algae are used as food in many countries.
- It is also used to prepare filters, glass and china clay (used in making of cup - saucers).
- A freezing substance can be extracted from the algae known as Jellidium.

Harmful effects :

- Algae decrease the depth of waterbodies.
- Water of some waterbodies becomes undrinkable due to algae.
- Algae causes accidents by making the surface very slippery.
- Observe algae found in your school campus and around water tank.

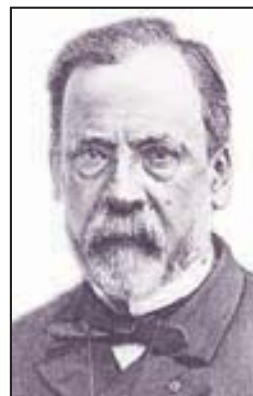
Proper age for a child for different vaccines

Vaccine	Proper
B.C.G. (T.B.)	After 1 month of birth
D.P.T.	Dose 1 : at the age of 1 and half month Dose 2 : after 1 month after first dose Dose 3 : 1 month after second dose
Polio	Dose 1 : at the time of birth Dose 2 : at the age of 1.5 month Dose 3 : 1 month after second dose Dose 4 : 1 month after third dose Dose 5 : 1 month after forth dose
Chickenpox	At the age of nine month
Chicken pox, Mumps Germen chickenpox	At the age of fifteen month
D.P.T. & Polio (First buster dose)	At the age between 1.5 to 2 years
D.P.T. & Polio (Second buster dose)	At the age between 5 to 6 years
Hepatitis B	Dose 1 : at the time of birth Dose 2 : 1 month after first dose Dose 3 : 5 months after second dose
Smallpox	1 dose after the age of 1 year
Typhoid injection	1 dose after the age of 2 year





Lue pasture
who discovered the vaccine
against rabbis



Adverd Jenner
Who discovered the vaccine
against small pox



Answer in short :

1. What is microorganism ? Give their types.
2. How does algae differ from other plants.
3. How many types of fungi are there ? Which are they ?
4. Give names of two diseases caused by bacteria.
5. Give names of two diseases caused by virus.
6. Where do we find algae ?
7. Which types of colours are found in algae ?
8. Which is the reserve food material in fungi ?
9. Which protozoan is causing amoeboid dysentery ?
10. What is the shape of amoeba ?
11. What is the shape of paramoecium ?
12. Why does virus been called the connecting link between living and non-living ?
13. Micro organisms are considered as friends and enemies of human being. Why ?
14. Give the name of virus in tobacco.

