

Chapter: Microorganisms – Friend and Foe

Class 8 Science Notes

Introduction

Microorganisms are **tiny living organisms** that are **not visible to the naked eye**. They are found **everywhere** – in air, water, soil, and even inside our bodies!

Types of Microorganisms

Type	Example	Characteristics
Bacteria	Lactobacillus, E. coli	Single-celled, can be helpful or harmful
Fungi	Yeast, Penicillium	Can be unicellular or multicellular
Protozoa	Amoeba, Paramecium	Usually aquatic, move with cilia or pseudopodia
Algae	Chlamydomonas, Spirogyra	Aquatic, contain chlorophyll, do photosynthesis
Viruses	HIV, Influenza, COVID-19	Not truly living; need host to reproduce

Where Microorganisms Live?

- **Air, Water, Soil**
 - **Inside and on other organisms**
 - **Extreme environments** (hot springs, deep ocean)
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Microorganisms – Friends (Useful Microbes)

🍷 1. In Making Food

- **Lactobacillus** helps in **curd formation**
- **Yeast** is used in **bread and alcohol** making (fermentation)

💊 2. In Medicine

- Some fungi like **Penicillium** produce **antibiotics** (e.g., Penicillin)

3. In Agriculture

- **Rhizobium bacteria** fix nitrogen in leguminous plants
- Increase **soil fertility**

☐ 4. In Industry

- Used to make **alcohol, acids, and enzymes**
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● Microorganisms – Foe (Harmful Microbes)

☐ 1. Disease-causing Microbes (Pathogens)

Disease	Microbe	Spread By
Tuberculosis (TB)	Bacteria	Air
Cholera	Bacteria	Contaminated water
Malaria	Protozoa (Plasmodium)	Mosquito (vector)
AIDS	Virus (HIV)	Sexual contact, blood
Common Cold	Virus	Air

☐ Food Spoilage & Preservation

✱ Spoilage

- Microbes can spoil **milk, bread, fruits** etc.

🗑 Preservation Methods

Method	Explanation
Refrigeration	Low temp slows growth of microbes
Heating (Pasteurization)	Kills harmful bacteria in milk
Salting / Sugar	Removes moisture from food
Canning	Airtight sealing prevents microbes
Chemical preservatives	Like sodium benzoate, used in jams, pickles

☐ Nitrogen Cycle (♻)

Steps:

1. **Nitrogen Fixation** – by lightning or bacteria like **Rhizobium**

2. **Nitrification** – conversion of ammonia to nitrates
3. **Assimilation** – plants absorb nitrates
4. **Ammonification** – dead matter converted to ammonia
5. **Denitrification** – conversion of nitrates back to nitrogen gas

✓ Maintains **nitrogen balance** in the atmosphere.

✓ Key Terms to Remember

- **Antibiotics** – Drugs that kill bacteria
 - **Fermentation** – Process where yeast converts sugar to alcohol
 - **Pathogens** – Disease-causing microbes
 - **Pasteurization** – Heating milk to kill microbes
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★ Summary

Microbes Are	Examples
Friends (Useful)	Lactobacillus, Yeast, Rhizobium
Foes (Harmful)	Plasmodium, Salmonella, HIV
Preservation Needed	Milk, Pickles, Bread, Cooked Food