



SNS COLLEGE OF TECHNOLOGY

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DEPARTMENT OF FOOD TECHNOLOGY

UNIT I: Microorganisms in Food

Topic: TYPES OF MICROBES IN MEAT, POULTRY, SEA FOODS AND DAIRY PRODUCTS

Different types of microorganisms are commonly found in **meat, poultry, seafood, and dairy products**, influencing spoilage, safety, and fermentation. These microbes include **bacteria, fungi (molds & yeasts), and viruses**.

1. Microbes in Meat

Spoilage Microorganisms

- **Pseudomonas spp.** – Common in refrigerated meats, causing slime and discoloration.
- **Lactic acid bacteria (LAB)** – Contribute to souring in vacuum-packed meat.
- **Clostridium spp.** – Causes putrefaction in anaerobic conditions.

Pathogenic Microorganisms (Foodborne Illness)

- **Salmonella spp.** – Causes salmonellosis from undercooked meat.
- **Escherichia coli (E. coli O157:H7)** – Produces toxins, leading to severe illness.
- **Listeria monocytogenes** – Thrives in refrigerated environments, causing listeriosis.
- **Clostridium botulinum** – Produces botulinum toxin in improperly stored meat.

2. Microbes in Poultry

Spoilage Microorganisms

- **Pseudomonas spp.** – Causes slime formation and off-odors in refrigerated poultry.
- **Shewanella putrefaciens** – Contributes to off-flavors and spoilage.
- **Molds (Penicillium, Cladosporium, Alternaria)** – Grow on poultry surfaces in high humidity.

Pathogenic Microorganisms

- **Salmonella spp.** – A leading cause of foodborne illness from poultry.
 - **Campylobacter jejuni** – Associated with raw or undercooked chicken.
 - **Staphylococcus aureus** – Produces heat-stable toxins leading to food poisoning.
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3. Microbes in Seafood

Spoilage Microorganisms

- **Pseudomonas spp.** – Dominates spoilage in cold-stored seafood.
- **Shewanella putrefaciens** – Produces trimethylamine (TMA), causing fishy odors.
- **Photobacterium phosphoreum** – Common in deep-sea fish, accelerates spoilage.

Pathogenic Microorganisms

- **Vibrio spp. (V. cholerae, V. parahaemolyticus, V. vulnificus)** – Cause seafood-borne infections.
 - **Clostridium botulinum** – Can produce toxins in improperly stored seafood.
 - **Listeria monocytogenes** – Found in smoked and raw seafood.
 - **Norovirus** – A common viral contaminant in shellfish.
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4. Microbes in Dairy Products

Spoilage Microorganisms

- **Pseudomonas spp.** – Causes rancidity in milk and dairy products.
- **Lactic acid bacteria (Lactobacillus, Streptococcus, Leuconostoc)** – Ferment lactose, leading to souring.
- **Molds (Penicillium, Aspergillus, Fusarium)** – Cause spoilage in cheese and dairy.
- **Yeasts (Candida, Geotrichum, Kluyveromyces)** – Can spoil yogurt and soft cheeses.

Pathogenic Microorganisms

- **Listeria monocytogenes** – A major concern in soft cheeses and unpasteurized milk.
 - **Salmonella spp.** – Can contaminate raw milk and dairy products.
 - **Escherichia coli O157:H7** – Found in raw milk, causing severe illness.
 - **Staphylococcus aureus** – Produces enterotoxins in dairy products.
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Summary of Microbial Risks in Food Products

Food Product	Spoilage Microorganisms	Pathogenic Microorganisms
Meat	Pseudomonas, LAB, Clostridium	Salmonella, E. coli, Listeria, Clostridium botulinum
Poultry	Pseudomonas, Shewanella, Molds	Salmonella, Campylobacter, Staphylococcus
Seafood	Pseudomonas, Shewanella, Photobacterium	Vibrio, Listeria, Clostridium botulinum, Norovirus

Prepared by PREETHI .KAP/FT/SNSCT

Food Product	Spoilage Microorganisms	Pathogenic Microorganisms
Dairy	Pseudomonas, LAB, Molds, Yeasts	Listeria, Salmonella, E. coli, Staphylococcus

Proper handling, refrigeration, and cooking can help prevent microbial contamination and foodborne illnesses.