



# SNS COLLEGE OF TECHNOLOGY

(An Autonomous Institution)

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COIMBATORE-641 035, TAMIL NADU



## DEPARTMENT OF FOOD TECHNOLOGY

### UNIT I: MICROBIAL SPOILAGE AND ITS CONTROL

#### Topic: Microbial spoilage of different types of foods

Microbial spoilage of food occurs when microorganisms such as bacteria, yeasts, and molds grow on food, leading to undesirable changes in taste, texture, odor, and appearance. The type of spoilage varies based on the food composition and storage conditions. Below are the different types of microbial spoilage in various food categories:

#### 1. Dairy Products

- **Milk:** Spoiled by bacteria like *Lactobacillus*, *Pseudomonas*, and *Clostridium*, causing souring, curdling, and off-odors.
- **Cheese:** Mold growth (*Penicillium*), gas formation (*Clostridium*), and slime production (*Pseudomonas*).
- **Yogurt:** Yeast contamination (*Candida*) leading to fermentation and bubbling.

#### 2. Meat and Poultry

- **Fresh Meat:** *Pseudomonas*, *Enterobacter*, and *Clostridium* cause slime formation, discoloration, and putrid odors.
- **Processed Meat:** *Lactobacillus* and *Micrococcus* cause souring, greening, and slimy textures.

#### 3. Seafood

- Spoilage by *Shewanella putrefaciens* and *Vibrio* species leads to sulfur odors, slimy surfaces, and color changes.

#### 4. Fruits and Vegetables

- **Fruits:** Yeasts (*Saccharomyces*) and molds (*Aspergillus*, *Penicillium*) cause fermentation, softening, and moldy patches.
- **Vegetables:** Bacterial soft rot (*Erwinia*, *Pseudomonas*) leads to tissue breakdown and slimy textures.

#### 5. Grains and Baked Goods

- Molds (*Aspergillus*, *Rhizopus*) cause spoilage with visible growth and mycotoxin production.

- Rope spoilage in bread is caused by *Bacillus subtilis*, making the texture sticky and producing an unpleasant odor.

## 6. Beverages

- **Juices and Soft Drinks:** Yeasts (*Saccharomyces*) cause fermentation, gas production, and off-flavors.
- **Alcoholic Beverages:** Bacteria like *Acetobacter* spoil wine and beer by producing acetic acid.

## 7. Canned and Fermented Foods

- **Canned Foods:** *Clostridium botulinum* can produce toxins leading to botulism.
- **Fermented Foods:** Undesirable microbial contamination can result in off-flavors and gas production.

## Prevention of Microbial Spoilage

- Proper refrigeration and freezing
- Pasteurization and sterilization
- Use of preservatives (salt, vinegar, and chemical additives)
- Good hygiene and handling practices.