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General Principles of Food Microbiology

For FSSAI Exam

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Food Microbiology & General Principles of Food Hygiene

General Principle of Food Microbiology

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Food Microbiology Current Status

- In the early 20th century, studies continued to understand the association and importance of microorganisms, especially pathogenic bacteria in food. Specific methods were developed for their isolation and identification.
- The importance of sanitation in the handling of food to reduce contamination by microorganisms was recognized.
- Specific methods were studied to prevent growth as well as to destroy the spoilage and pathogenic bacteria.
- There was also some interest to isolate beneficial bacteria associated with food fermentation, especially dairy fermentation, and studying their characteristics.
- However, after the 1950s, food microbiology entered a new era.
- Availability of basic information on the physiological, biochemical, and biological characteristics of diverse types of food, microbial interactions in food environments and microbial physiology, biochemistry, genetics, and immunology has helped open new frontiers in food microbiology.

Introduction

- Micro-organisms are living entities of microscopic size and include **bacteria, viruses, yeasts, and molds (together designated as fungi), algae, and protozoa. While bacteria are classified as prokaryotes (cells without definite nuclei), the fungi, algae, and protozoa are eukaryotes (cells with nuclei); viruses** do not have regular cell structures and are classified separately.
- Micro-organisms are present everywhere on earth, which includes humans, animals, plants and other living creatures, soil, water, and atmosphere, and they can multiply everywhere except in the atmosphere.
- Together, their numbers far exceed all other living cells on this planet.

- They were the first living cells to inhabit the earth over 3 billion years ago; and since then, they have played important roles, many of which are beneficial to the other living systems.

- Among the micro-organisms, some molds, yeasts, bacteria, and viruses have both desirable and undesirable roles in our food. In this unit, the scope of food microbiology, the importance of microbes in food and the predominant microorganisms associated with food have been discussed.

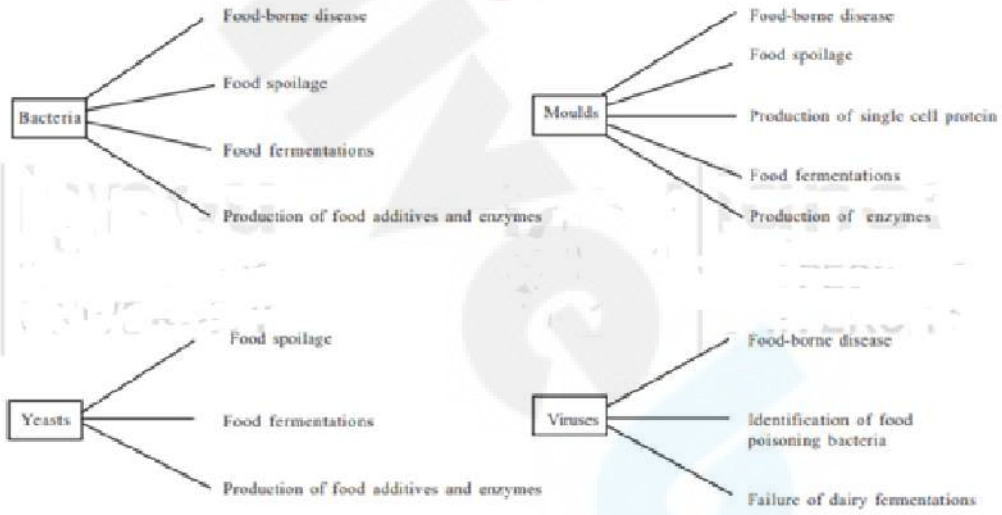
Origin and Scope

- Although processes of food spoilage and methods of food preservation and food fermentation have been recognized since ancient times, it was not until the 1800s that the relationship between foods and micro-organisms was established.

Figure 4.1. **Topics of major interest to the food microbiologist.**

- In 1837 Schwann proposed that the yeast which appeared during alcoholic fermentation was a microscopic plant, and between 1857 and 1876 Pasteur showed that micro-organisms were responsible for the chemical changes that take place in foods and beverages.

- Their observations laid the foundation for the development of food microbiology as we know it today.
- Soon after these early discoveries were made, knowledge about the role that micro-organisms play in food preservation, food spoilage and food preservation, food spoilage and food poisoning accelerated rapidly until food microbiology gradually emerged as a discipline in its own right.
- Food microbiology is now a highly developed area of knowledge.
- Not all groups of micro-organisms are of equal interest to the food microbiologist. Bacteria come very much on top of the list with moulds and yeasts also of considerable importance and viruses less so.



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