

Content of matter

MYCOLOGY:

I. General Characteristics of Fungi (Molds and Yeasts)

- Chemical Composition and Cell Structure
- Growth and Reproduction
- Laboratory and Large-Scale Cultivation

II. Classification of fungi

- Yeasts
- Chitridomycetes
- Oomycetes
- Zygomycetes
- Ascomycetes
- Imperfect fungi
- Basidiomycetes
- Ectotrophic and endotrophic mycorrhizae

III. The Importance of Using Fungi in: Food, Agriculture, and Public Health

A. Food Industry

1. Uses of Molds:

- The main phases of mold growth
- Examples of cultures on solid and liquid media
- Development and differentiation
- Production of metabolites (primary and secondary)
- Use in dairy production
- Edible mushrooms

2. Uses of Yeasts:

- Beer production
- Bread fermentation

B. Pharmaceutical Industry

Fungi producing metabolites: vitamins, antibiotics, and enzymes

- Origin
- Isolation
- Extraction and purification
- Therapeutic applications and uses

IV. Pathological Aspects

A. In Humans and Animals:

- Candidiasis
- Dermatophytes

B. In Plants:

- Storage Fungi
- Mycotoxins

ALGOLOGY:

1. General Characteristics of Algae
2. Structure and Morphology of Algae
3. Algal Reproduction Cycle (Sexual and Asexual)
4. Taxonomy of Algae:
 - 4.1. Chlorophyta
 - 4.2. Phaeophyta
 - 4.3. Rhodophyta
 - 4.4. Bacillariophyta (Diatoms)
 - 4.5. Dinoflagellata
 - 4.6. Oomycota
5. Importance of Algae (Deleterious and Beneficial Effects of Algae)
 - Food (food, agar-agar, POU, additives, etc.)
 - Pharmaceutical industry (capsules, carrageenans, etc.)
 - Industry (cosmetics, textiles, gels, etc.)

VIROLOGY

1. Introduction to virology
2. Viruses and virions

3. General properties
4. Structure of viruses and bacteriophages
5. Viral systematics
6. Viral genomes
7. Viral replication: general characteristics of viral replication Multiplication of single-stranded RNA viruses of positive and negative polarity, double-stranded RNA viruses, single-stranded DNA viruses, and double-stranded DNA viruses; multiplication of RNA viruses via DNA intermediates and of DNA viruses via RNA intermediates.
8. Animal viruses and plant viruses: comparison of the two types of viruses.
9. Latent infections, cytotoxic agents.
10. Viral restriction.