

Chapter 11 : General mycology

Fungi # Bacteria

Fungi

- Large size
- Eukaryotic
- Contain mitochondria and other organelles
- Contain ergosterol in cell memb.
- Cell wall → Chitin
- Spores → for reproduction
- Reproduction may be sexual (meiotic) or asexual (mitotic)
- Heterotrophic
- No obligate anaerobe

Bacteria

- Smaller size
- Prokaryotic
- Don't contain
- No sterols # Mycoplasma (contain cholesterol in cell memb.)
- Cell wall → P.G.
- Spores → for survival
- Asexual reproduction
- Hetero or Autotrophic
- Many → obligate anaerobe

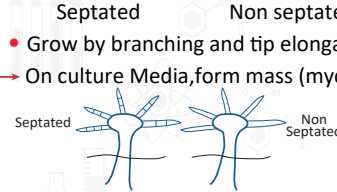
Morphological forms

1 Yeast

- Single cell (Rounded or oval)
- Reproduce by budding
- May form pseudohyphae
- e.g. **Candida, Cryptococcus**

2 Moulds

- Long filaments (hyphae)
- Grow by branching and tip elongation
- On culture Media, form mass (mycelium)
- e.g. **Aspergillus, Penicillium, Dermatophytes**



Clinical Classification

3 Dimorphic fungi

- At body temp. → grow as yeast
- At Room temp. → grow as mould
- e.g. **Histoplasma**

1 Mycotic inf.

1 Superficial mycoses

- * Affect keratinized layers of skin
- * e.g. **Pityriasis versicolor**

2 Cutaneous mycoses

- * Affect deep layers of skin
- * e.g. **Candida, Dermatophytes**

3 S.C. mycoses

- * Fungi in soil → implanted by trauma in S.C. tissue
- * e.g. **Mycetoma**

4 Deep (systemic) mycoses

- * Affect internal organs → 2 groups

True pathogen

- * Infect normal healthy individual
- * e.g. **Histoplasma, Blastomyces**

Opportunistic pathogen

- * Infect I.D pt.
- * **Pneumocystis, Cryptococcus, Candida**

2 Mycotoxicosis

Due to consumption of food containing fungal toxins

Aflatoxin of **Aspergillus flavus**

Chronic liver damage and cancer

Mushroom poisoning

Damage to liver, Kidney, B.M

3 Allergic disorders

Spores of **Aspergillus** may be allergen in some cases of Atopy

Asthma, urticaria, Hay fever

General Micro (13)

Pathogenesis XXXXX

Systemic fungi inf. (**Histoplasma**)

Granuloma (Composed of macrophages and TH cells)

Other Fungi

Pyogenic inf. (composed of neutrophils)

Diagnosis of fungal inf.

Direct methods

- Detection of fungi, and /or their Ags in pt. Specimen
- Isolation of fungi (Culture)

Indirect methods

- Detection of Anti-fungal ABs (in systemic mycoses)
- Skin test (less frequent)

Antifungal Drugs

As fungi are eukaryotes → limited range of non-toxic systemically active antifungal drugs

Selective toxicity of antifungal Drugs is based on Presence of ergosterol in fungal cell memb.

(human cell memb. contain cholesterol)
(Bact. cell memb. contain no sterol)

Most commonly used drugs

- 1- **Amphotericin B**
- 2- **Mycostatin (Nystatin)**
- 3- **Azole Drugs**
 - Fluconazole
 - Ketoconazole
 - Itraconazole