

Candidiasis

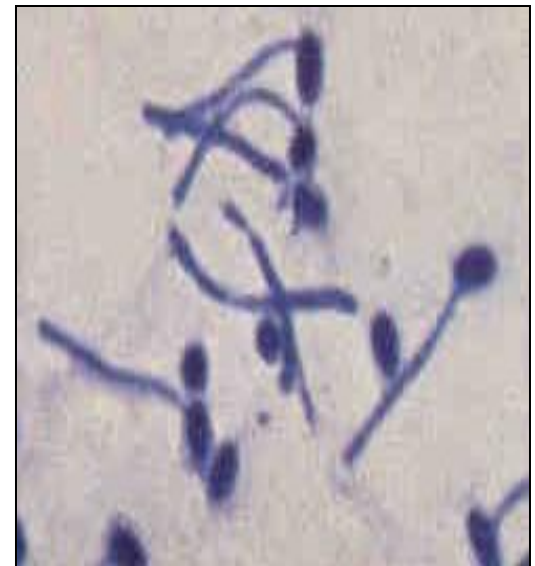
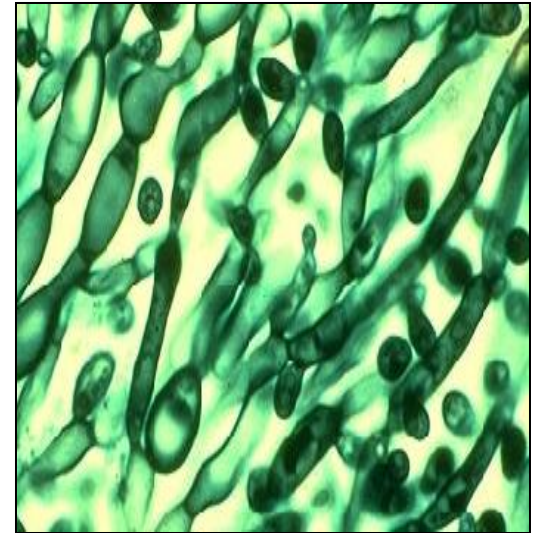
Candidia albicans



Candidiasis

Candidiasis :is an infection caused by any of several types of yeast (fungus) called Candida. The most common is called *Candida albicans*.

- This yeast is normally present on the skin, in the intestines and in the vagina, but doesn't cause disease.
- However, sometimes it can develop into an infection—usually of the mouth, vagina or skin—that causes red or white patches, itching and irritation



Characterized yeast *Candida albicans*, a number of features

- *C. albicans* - most important pathogen
 - Multiple forms: budding yeast, pseudohyphae, true hyphae. Forms germ tubes (in presence of serum).
- Classification Dimorphic
- Fungus can exist in yeast and fungal form (virulence factor)
- Morphogenesis
 - 1- Unicellular yeast (Harmless)
 - 2- Filamentous (pathogenic).
- Small size yeasts (10-12) μ m diameter
- Gram +
- Growth : reproduces by budding
- Principal cell wall polymers
 - 1- Glucan
 - 2- Mannan
- Temperature : 37 ° C ,
- PH : needs a neutral PH environment to
- Strict aerobe, Source Commensally found in gut, genitals, and lungs Associated with immunocompromised
- Reservoir: soil, food, nosocomial .
- Commensal \longleftrightarrow Pathogen
- Rapid Multiplication and spread

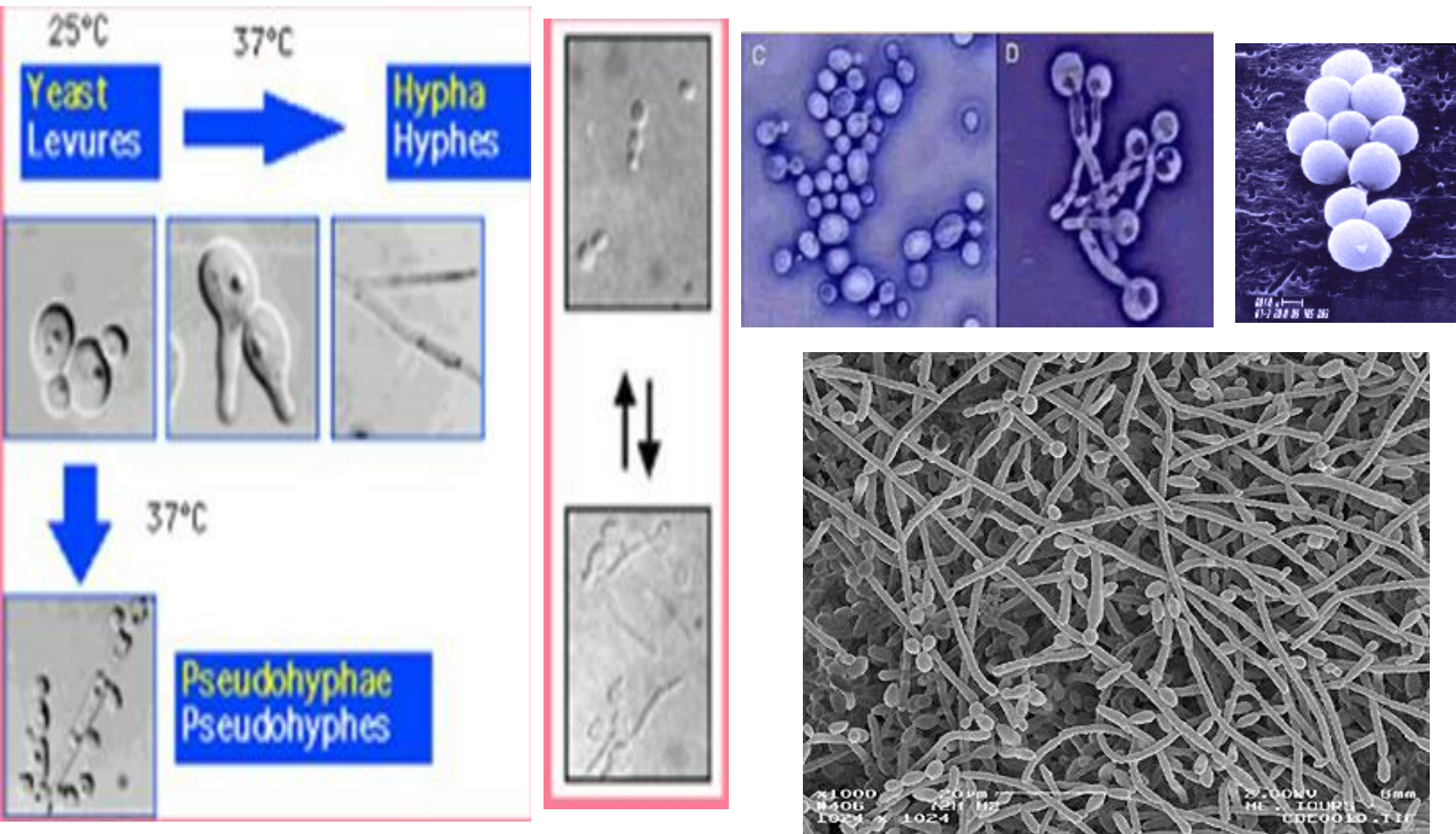
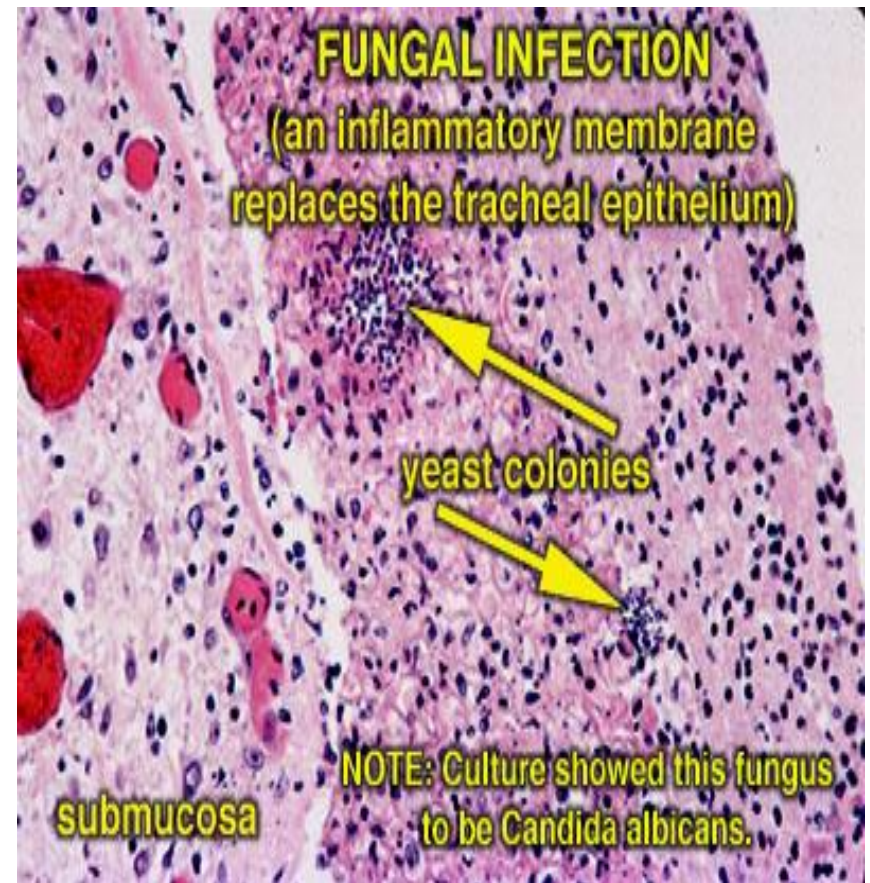
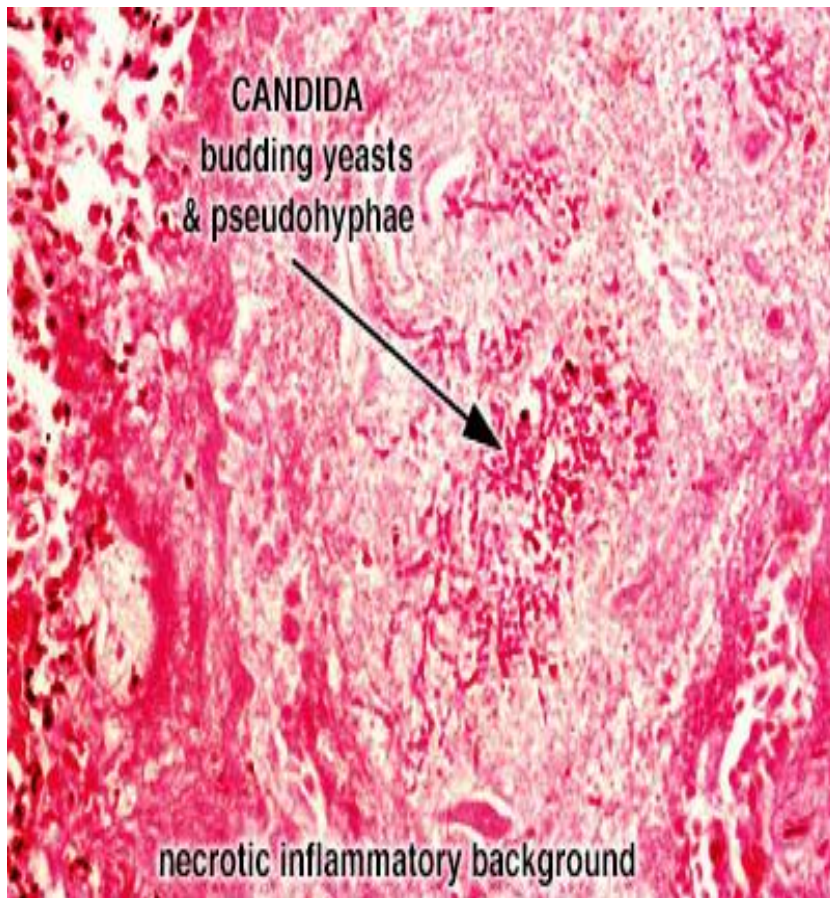


Fig 1

Candidia infections: histology



Rout of transmission portal of entry

- 1-C. albican is normally present on the skin and in mucous membranes such as the vagina, rectum and digestive tract .
- 2- C. albican also can travel through the blood stream in immunocompromised individuals .
- 3- Candida can enter newborn infants during or shortly after birth This organism is opportunistic for example, antibiotics kill the good bacteria leaving Candida free to grow

Pathogenesis of *Candida* infections

❑ Most infections are endogenous

Candida is component of normal oral, GI, vaginal flora

❑ Pathogenic factors

1. Essential role of mucosal adherence
2. Alterations in micro-environment and/or microbial flora predispose to symptomatic infection.
3. Germ tube formation, proteinases, phospholipases may contribute to local invasion by *C. albicans*

Candida infections

1. Cutaneous infections - nails, diaper rash,
2. Mucosal infections
 - a) thrush (tongue, oral mucosa), pseudo-membrane; seen with inhaled steroids, cancer, HIV
 - b) esophagitis in suppressed pts (mucosal invasion)
 - c) vulvovaginitis (discharge containing epithelial cells, pseudohyphae, hyphae)

Candida infections

3- Candidemia/disseminated candidiasis

- a) *Candida* spp are 4th leading cause of nosocomial bloodstream infections
- b) Antibiotics, iv catheters increase risk
 - Antibiotics eliminate normal flora, permit overgrowth of *Candida* and entry across damaged mucosa
 - IVs provide entry through skin
- c) Dissemination to kidney, brain, myocardium, eye is common.
 - Ocular candidiasis - white cotton ball-like lesions of retina; can cause blindness

Candida infections

4-Urinary tract candidiasis

- Usually seen in pts with urinary catheter.

5- Hepatosplenic candidiasis

1. Occurs in severely compromised (neutropenic) pts.
2. Multifocal abscesses
3. Genital yeast infection
4. Deep candidiasis

Candidiasis - Diagnosis

- Direct microscopic examination
 - Important to demonstrate tissue invasion in mucosal infection; positive culture alone may be due to colonization
- Culture
 1. *Candida* spp grow well on standard media.
 2. Candidemia readily detected with commercial blood culture systems.
- PCR Based Molecular Techniques

Experiment

- 1- Learn how to collect the sample from different regions to get a sample containing the suspected presence object
- 2- Prepare slides of models collected and pigmentation gram positive stain .
- 3- Prepare the special culture media and the cultivation and knowledge appropriate for cultivation requirements .
- 4- Preparation experience germ tube .

