

MEDICALLY IMPORTANT YEAST

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The Medically Important Yeast

1-candida albicans

2-candida sp

3- Cryptococcus neoformance

4- Rhohodoterella

5-sacaromyces servacies

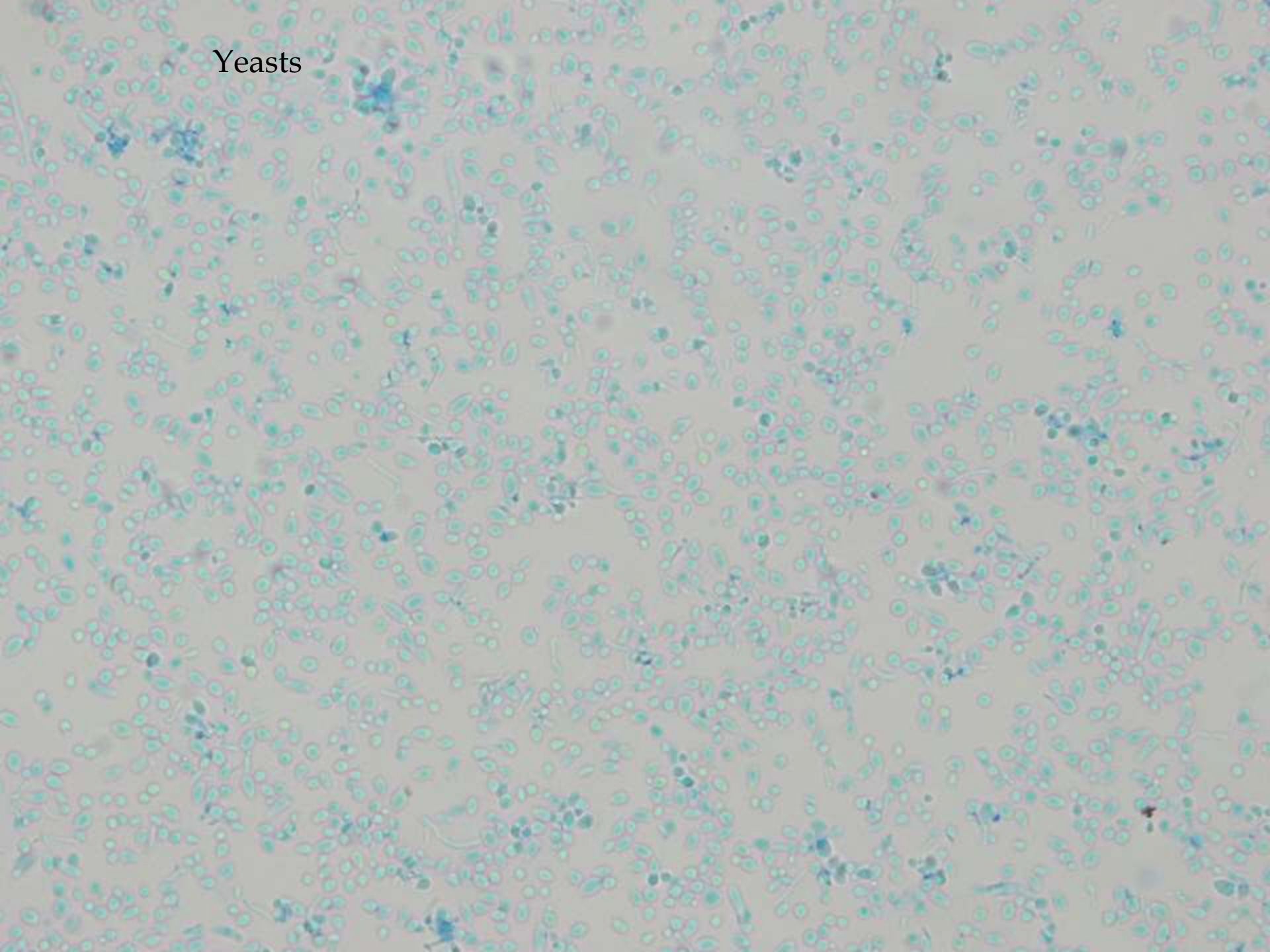
6-Trichosporon beigeli

7-Geotricum condidium

Candida albicans

- Colony morphology: cream colored and single colony
- Microscopic structure:
- LPCB from SDA showing >>>> yeast cells
- LPCB from CMA showing >>>> yeast cells
- Pseudohyphae
- Terminal chlamydospore
- Blastospores
- All yeast will give us Pseudohyphae and yeast cells or yeast cells with some thing els on CMA except c.alb will give terminal chlamydospore
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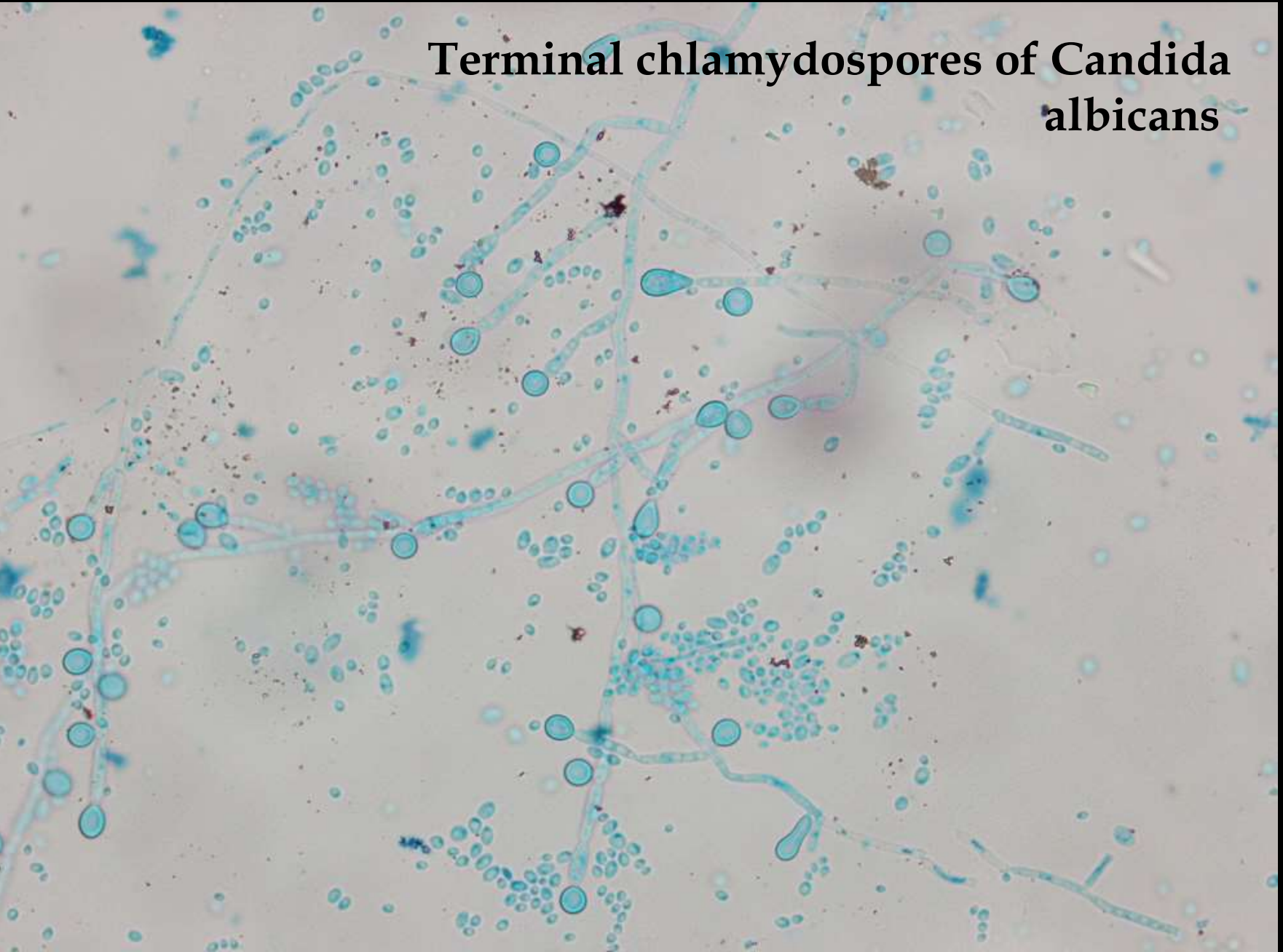
Yeasts



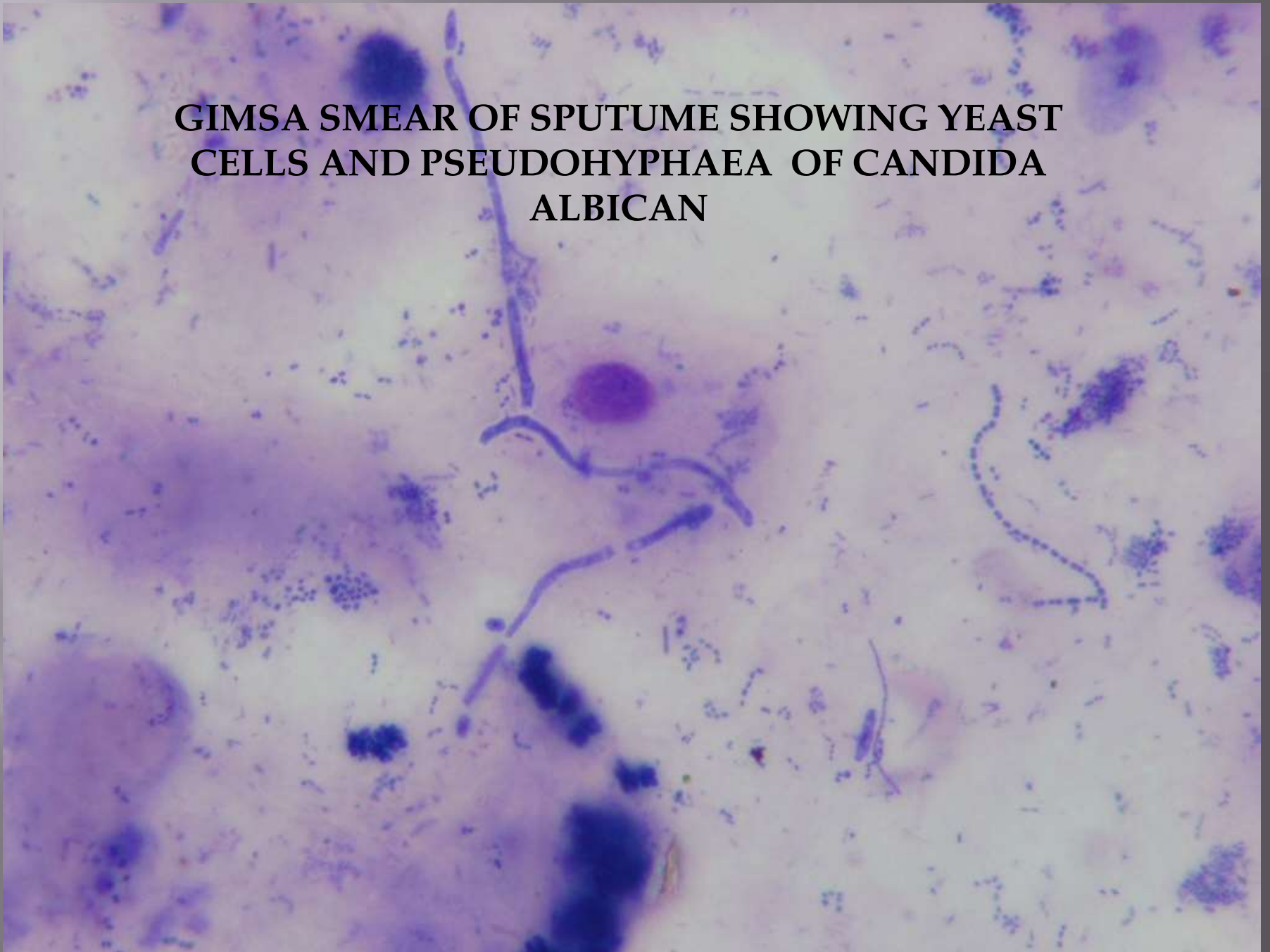
Terminal chlamydospores of *Candida albicans*



Terminal chlamydospores of *Candida albicans*



**GIMSA SMEAR OF SPUTUM SHOWING YEAST
CELLS AND PSEUDOHYPHAEA OF CANDIDA
ALBICAN**



Note

- ▣ on SDA Trichosporon beigeli and Geotricum condidium will give us Arthrospores and true hyphae

Arthrospores of *Geotrichum*
candidum



Trichosporon beigelii



Yeast identification

A- perform **germ tube test** (if result is negative , continue as follow

B- be sure that culture is pure , for identification test as :

1- commercial yeast identification system

A- API 20 C

B- Vitek yeast identification system

2- CHROMagar candida plate

3- Ureas test

4- pellicle formation test

5- culture in SDA, CMA , SDA-CC

6- NEGATIVE STAIN

GERM TEST TUBE

***procedure:**

0.5 to 1 ml of serum added to the yeast and incubate it at 37 c for 1.5 to 2 hours up to 3 hours .

Result :

Germ tube + (germination)

Germ tube -(no germination)

Positive Germ test tube



(API-20 C)

API -20 C stand for

Analytical profile index 20 different carbohydrate

*use: for yeast identification

API20C: is strip consist small tubes •
contain different types of carbohydrate

*principle:
carbohydrate assimilation

API-20 C PROCEDURE

***procedure:**

* in this test we place the organism in tube contain sterile saline(suspension)

* then by using sterile pipette place (inoculate)
2-3 drops in the API20c medium

*Then place the strip in an incubation tray contain water to provide humid atmosphere and the lid are placed

API-20 C PROCEDURE

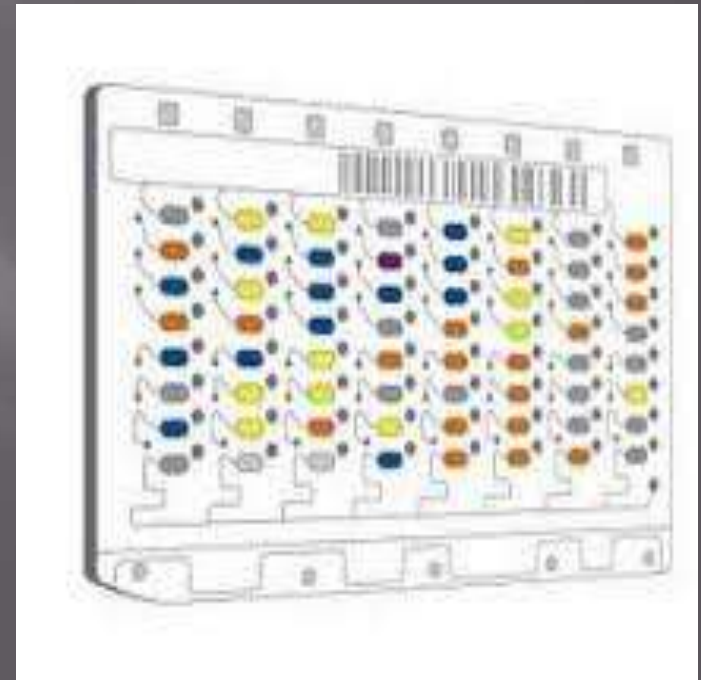
- ▣ If there is growth we will see hazy or turbid >>>
+ve
- ▣ If there is no growth the tube will appear clear >>
-ve



VITEK System

- ▣ fully automated system dedicated to the identification and susceptibility testing of microorganisms e,g : yeast in 15 h due to a sensitive fluorescence-based technology.
- ▣ The ID-YST card consists of 47 biochemical reactions.
- ▣ VITEK system is a **rapid and accurate method** for the identification of medically important yeasts

VITEK System



CHROMagar candida

▣ CHROMagar for candida :

- Agar media use to identify candida species according to color of the colony on the media
- It contain : agar , pepton , chromogenic mix and chlormphenicol

▣ Procedure :

Direct streaking , incubation for 48 h at 30 C (aerobic conditions)

CHROM AGAR

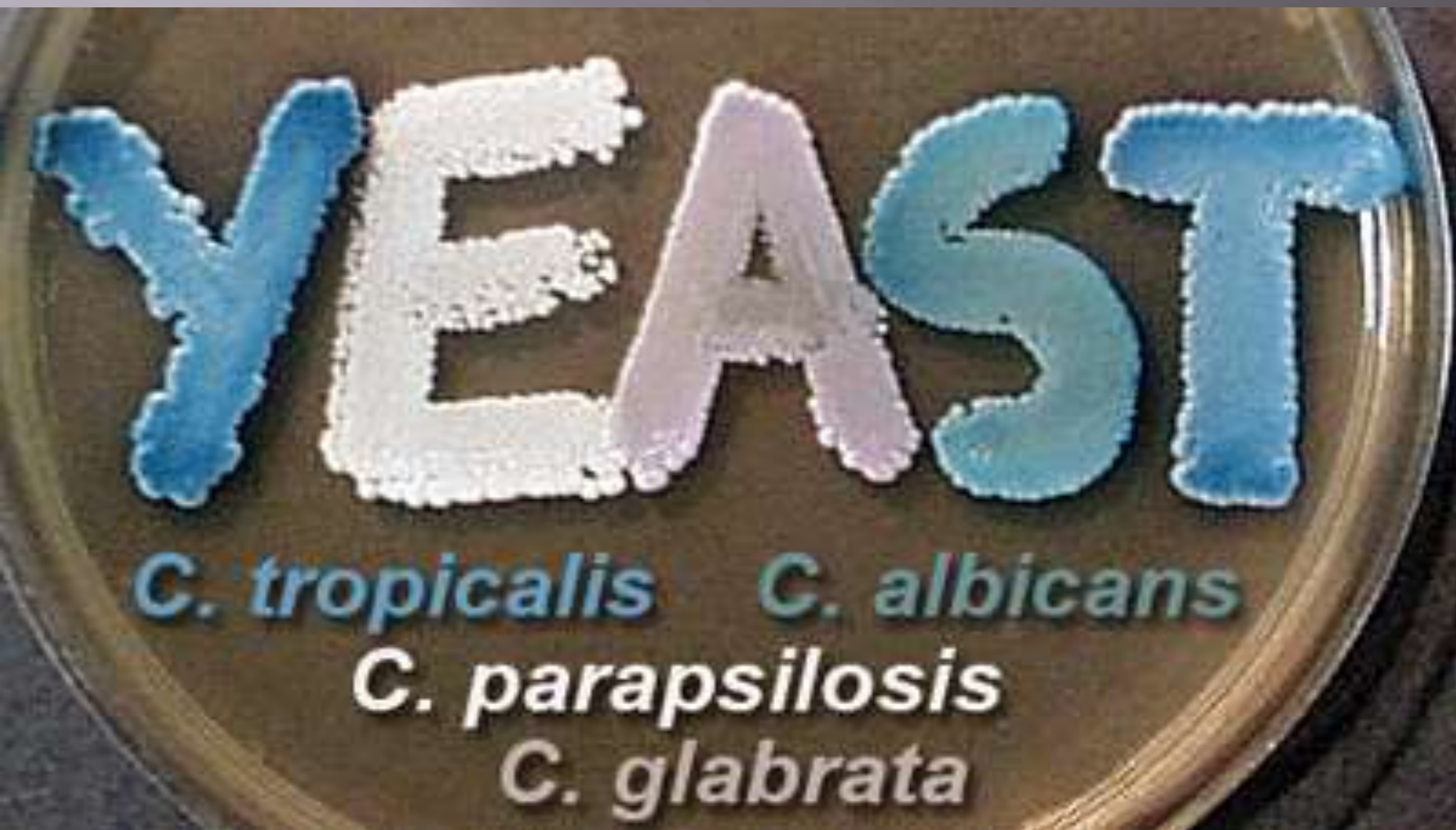
Advantages:

- Easy to read with color intensity and specificity □
- Sensitivity and specificity for **reliable** results □
- Identification in **18-24 hours** □
- Save time with less need for confirmation testing □

Disadvantages:

- Expensive** □

CHROMagar



Ureas'e test

- This test is used to detect the enzyme urease, which breaks down urea into ammonia
- $$\text{urea} \xrightarrow{\text{urease (enzyme)}} \text{NH}_3 + \text{CO}_2$$
- if the yeast grow in the media they will produce enzyme which destroy the urea in the media so the media color will change from acidic (yellow) to alkaline (pink)
- Indicator: phenol red

Urease test



Cryptococcus neoformanes

- ▣ A drop of Indian ink is placed on glass slid and mix it with specimen (e,g: 1 drop CSF)
- ▣ A cover slip is add and the slid examined for yeast cell with capsule
- ▣ Result :
Acapsular material is exhibited by apperance of clear halo

Cryptococcus neoformans with
nigrosin stains

