



Corynebacterium spp.



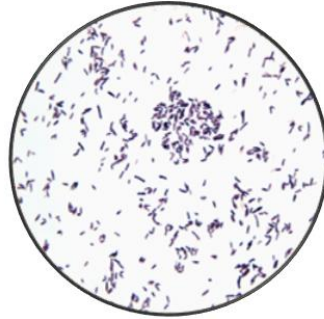
Species

Morphology and Staining

Cultural Characteristics

Diseases

Biochemical Tests



Assist Lecturer Basma Bashar Haseeb
Department of Environmental Health

6.3.2025

1

Practical Medical Bacteriology – 2nd stage - Department of Environmental Health © 2024-2025

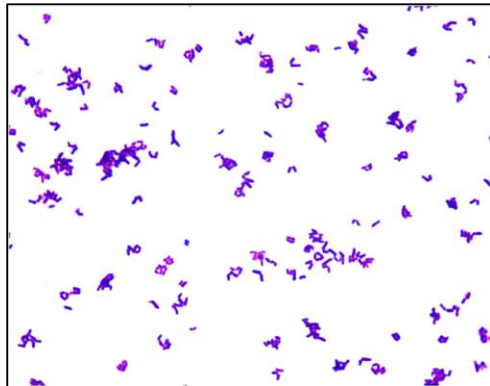


Species



Corynebacterium diphtheria

C. ulcerans



2

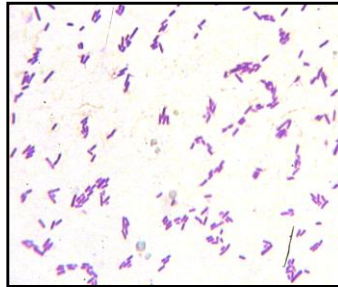
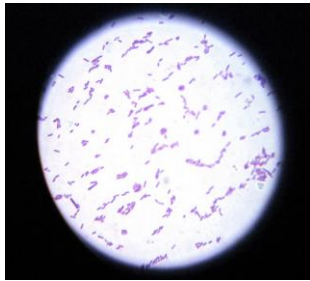
Practical Medical Bacteriology – 2nd stage - Department of Environmental Health © 2024-2025



Morphology and Staining



Corynebacterium species are Gram-positive, non-motile rods often with clubbed ends, occurring singly or in pairs. Non spore-forming.



3

Practical Medical Bacteriology – 2nd stage - Department of Environmental Health © 2024-2025



- Their size is 2 – 6 μm in length and 0.5 μm in diameter.
- They are arranged together in a characteristic way, which has been described as 'V' or 'L' shaped 'palisades'.
- Metachromatic granules are usually present representing stored phosphate regions.
- Some cells may stain unevenly giving a beaded appearance

4

Practical Medical Bacteriology – 2nd stage - Department of Environmental Health © 2024-2025



Cultural Characteristics



- The species are aerobic or facultative anaerobic and exhibit a fermentative metabolism (carbohydrates to lactic acid) under certain conditions.
- They are fastidious organisms, growing slowly even on enriched medium (agar containing blood and potassium tellurite).

5



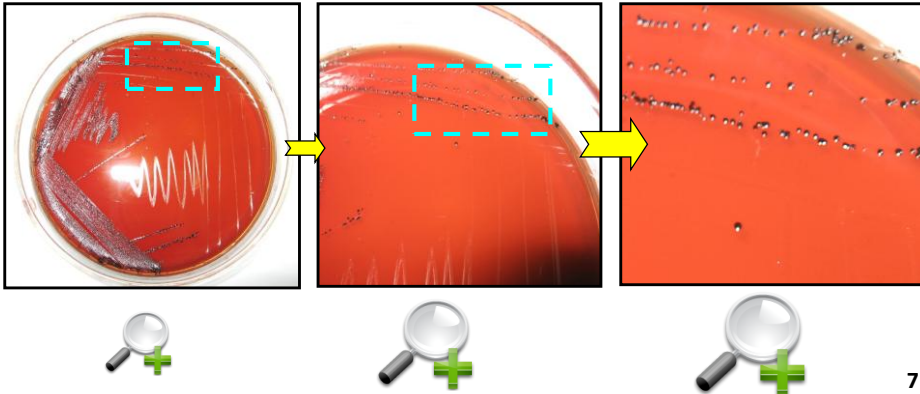
- Agar containing blood and potassium tellurite serves as a semi-selective and differential medium.
- On blood agar, they form small greyish colonies with a granular appearance, mostly translucent, but with opaque centers, convex, with continuous borders. Their optimum growth temperature is 37°C.

6



Selective media

Blood agar with potassium tolerate or Hoyle's media.



7

Practical Medical Bacteriology – 2nd stage - Department of Environmental Health © 2024-2025



Skin swabs on blood agar incubated in (5 to 10% CO₂) at 35 -37 °C for 40 - 48 hours .

Throat swabs incubated anaerobically at 35 - 37°C for 16 to 24 hours. β -haemolytic.

8

Practical Medical Bacteriology – 2nd stage - Department of Environmental Health © 2024-2025



Diseases

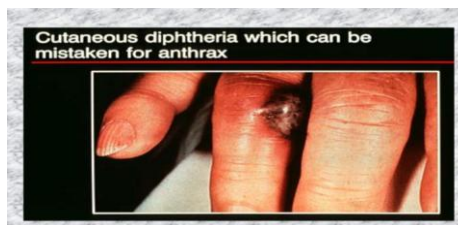
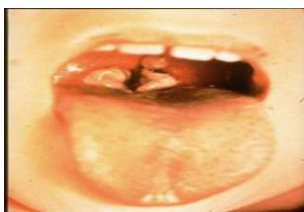


Corynebacterium diphtheriae

Clinical findings:

Respiratory diphtheria Thick, gray, adherent pseudomembrane over the tonsils and throat

Cutaneous diphtheria ulcerating skin lesion covered by a gray membrane .



Practical Medical Bacteriology – 2nd stage - Department of Environmental Health © 2024-2025



Laboratory diagnosis:

Specimens: throat swab or swab from pseudomembrane

Microscopy-

- Staining by Gram or methylene blue (G +ve rods arranged as L or V shaped)
- Albert stain (differential stain) for metachromatic granules

Culture-

Loeffler's medium (creamy white colonies in 6-8 hrs)

Advantages of Loeffler's medium

- 1 -growth is very fast
- 2-metachromatic granules are seen better



10

Practical Medical Bacteriology – 2nd stage - Department of Environmental Health © 2024-2025



Potassium tellurite medium (McLeod's medium)

Black colonies Because this agar contain tellurite that is reduced to elemental tellurium within the organism

Advantages of McLeod's medium

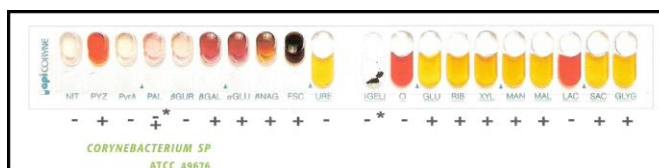
- 1-It is a selective medium and gives a discrete colonies of *C. diphtheriae*
- 2-It can be used to isolate *C. diphtheriae* from carriers even the small number of bacteria are present.



11



Biochemical tests and API for diagnosis of *Corynebacterium* spp.



12



Thanks