Corynebacterium (Arcanobacteriun)

Species :-

Corynebacterium pyogenes

Corynebacterium pseudotuberculosis

Corynebacterium renale

Corynebacterium bovis

Corynebacterium or Rhodococcus equi

Morphology and Staining :-

1- Gram +ve.
2- Pleomorphic rods (small rods or coccoid).
3- Arrangement : single, pairs, pal aside and Chinese letters.
4- Non-motile.
5- Non-spore forming.
6- Metachromatic granules can be seen in *Corynebacterium renale*,*Coryne. Pseudotuberculosis*, *Coryne. Bovis* and *Coryne. equi* by using Albert's or Neisser stain.

Cultural characteristics :-

The important media used for growth is :

1-**blood agar :**-the colonies of *Corynebacterium pyogenes* on blood agar are grey and surrounded with narrow zone of β-hemolysis.

the colonies of *Corynebacterium pseudotuberculosis* appear grey surrounded with clear zone of β-hemolysis.

the colonies of *Corynebacterium renale* are grey but not hemolytic and colonies of *Coryne. or Rhodococcus equi* are pink in color on blood agar but not hemolytic.

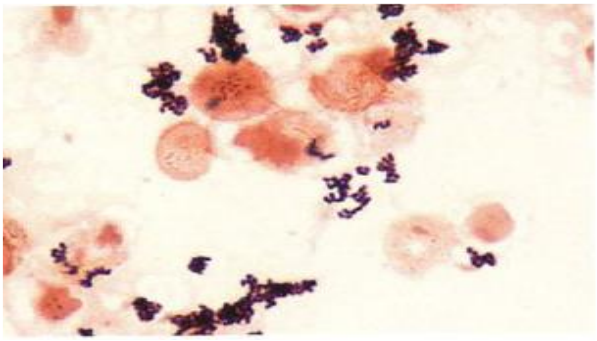
2- **blood agar (Tellurite potassium) or Hoyle medium** (selective media)

Biochemical test :-

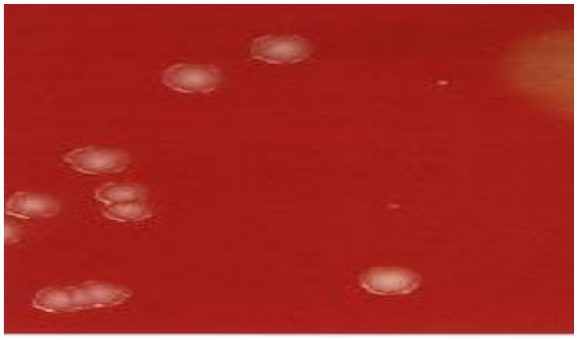
Species	β-hemolysis	Gelatinase	Nitrate reduction	Lactase	Maltose
Coryne.pyogenes	+	+	-	+	+
Coryne. pseudotuberculosis	+	-	-	-	+
Coryne. renale	-	-	-	-	-
Coryne. equi	-	-	+	-	-

Diagnosis :-

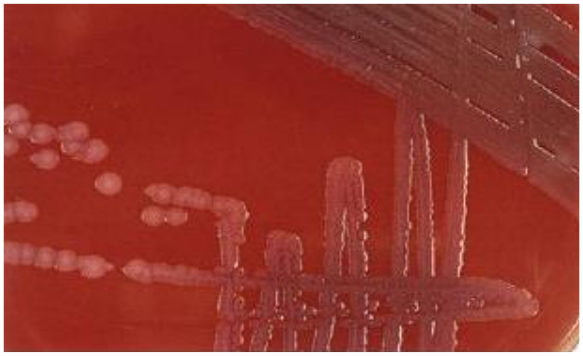
1. clinical signs depend on type of disease and animal.
2. smear from pus, tracheal washing and stain with Gram's stain. chter
3. cultural characteristics in blood with potassium tellurate or Hoyle medium.
4. smear and stain with Albert's stain.
5. biochemical test and API specialized with Corynebacterium.



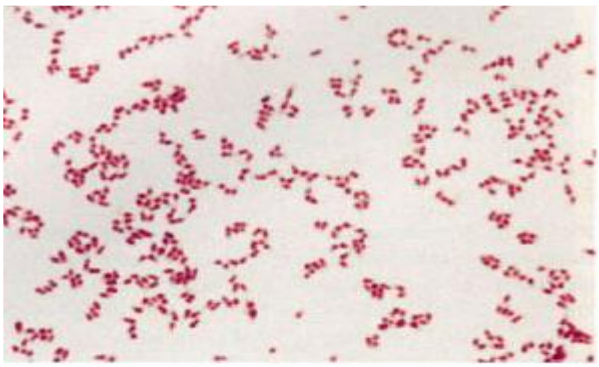
Gram stain of *corynebacterium spp*



colonies of *arcanobacterium spp*



Colonies of Rhodococcus on 5% sheep blood agar



Microscopic appearance of Rhodococcus sp.

Listeria

Species :-

Listeria monocytogenes

Listeria ivanovii

Morphology and Staining :-

1-Gram +ve
2-Small rods
3-Arranged as single, pair or v-shape (in new culture it is similar to the arrangement of corynebacterium (palisade)
4-Motile in liquid media which contain glucose in 6-25C° for 6-18 hour (tumbling movement)
5-Non-spore forming

Cultural characteristics :-

1- this bacteria grows aerobically but some species need Co_2
2-the growth increases with addition of serum, blood, glucose or liver extract.
3-The important media that are used for cultivate the listeria are :-
a-**Blood agar :** the colonies are small, round, β-hemolytic
b-Nutrient agar : the growing colonies appear in two form:-

1-smooth colony :- small, round, translucent and gray or luish gray.
2-Rough colony :- big, flat, rough surface, irregular edge

Biochemical tests :-

Species	β-hemolysis	Catalase	CAMP test with		Acid		Tumbling motility 22-25C°
			S. aureus	Rhodo. equi	Rhamnose	D-xylose	
Listeria monocytogenes	+	+	+	-	+	-	+
Listeria ivanovii	+	+	-	+	-	+	+

Isolation and identification :-

tissue from brain is macerated and mixed with liquid nutrient medium and incubated at4 C°.subculture are made on blood agar with nalidixic acid. If the bacteria can't grow on the primitive culture then, returning subculture is called Gray's enrichment technique.

Diagnosis:-

1- clinical signs
2-grays enrichment technique and culture the bacteria on the blood agar to observe the β-hemolysis .
3-biochemical tests
4-API special Listeria