Campylobacter

Species :

Campylobacter fetus subsp. venerealis

Campylobacter fetus subsp. fetus

Campylobacter jejuni subsp. jejuni

Morphology and staining :-

1- The shape of these bacteria is like a comma or s-shape or seagull shaped.
2- Arrangement : single, pairs, or short chains
3- Gram-negative
4- Motile/ linear movement or corks crew motility by monotrichous flagella
5- Non-spore forming
6- Non-capsulated

Cultural characteristics :-

1- microaerophilic bacteria
2- grows well in the presence of 5%o2, 10% Co_2 and 85% N_2
3- requires serum or blood in the primary isolation
4- colonies on blood are circle, high, opaque, glistening with regular ridges
5- grows on macConkey agar

Biochemical test :-

Species	Catalase	Nitrate reduction	Lead acetate H_2S production	Triple sugar iron H_2S production	Nalidixic acid	cephalothin
C.fetus subsp. venerealis	+	-	-	-	resistant	S
C. fetus subsp. fetus	+	-	+	-	resistant	S
C. jejuni subsp. jejuni	+	-	+	-	susceptibile	R

Diagnosis :-

1- isolation of these bacteria from aborted fetus, infected cows and bulls.
2- Smear are stained with Gram stain to identify the shape of bacteria
3- Antibody florescent test.
4- Specimen from fetal absomal contents or vaginal discharge or seminal fluid are cultured on blood agar in atmosphere containing 5% O_2, 10% Co_2 and 85% N_2.

Brucella

Species :-

Brucella abortus

Brucella melitensis

Brucella suis

Brucella canis

Brucella ovis

Brucella neotomae

Morphology and staining :-

1- Gram –ve 2- rod or coccobacilli 3-arrangement : single or pairs or small groups or short chains.

4-resistant for decolorlization with 0.5% acetic acid while staining with modified Ziel-Nelsen stain or by Koster stain(the bacteria appear red on a blue ground

5- Non-motile
6- Non-spore forming

Cultural characteristics :-

1- Aerobic bacteria except Brucella abortus which requires 5-10% Co_2 for growth.
2- On nutrient agar : the colonies of Brucella abortus, Brucella melitensis and Brucella neotomae appear as pin point, circular and transluscent.
3- On blood agar : the colonies of Brucella abortus, Brucella melitensis and Brucella neotomae appear as pin point, circular, glistering. Non-hemolytic and pale yellow.
4- Selective media for Brucella
5- Serum agar
6- Albimi medium
7- Liver extract serum agar
8- Serum dextrose agar

note

mixture of antibiotics should be added to the specific media of Brucella, to prevent the growth of fungus and bacterial contamination. The antibiotics include: sulphate, polymyxin B, bacitracin, cycloheximide, Nalidxic acid, Nystatin and Vancomycin.

Diagnosis :-

1) rapid presumptive diagnosis by making smear from placental tissue or fetal stomach contents or uterine discharges and staining with modified Zielh- Nelseen stain or Koster stain.
2) Bacterial isolation: culturing the samples on the selective media and incubate for 2-3 days, after that tests the colonies by agglutination with antisera.

3) Guinea pigs injection
4) Serological test including :

a- agglutination test
b- rapid test (plate test)
c- card test (rose Bengal plate test)
d- milk ring test
e- complement fixation test
f- florescent antibody techniques

milk ring test:- Brucella antigen staining with hematoxcylin, add one drop of Brucella antigen to each of 1 ml of the milk and incubate at 37C° for 30-60 minutes the result would be positive with the formation of blue ring on the top of the test tube.