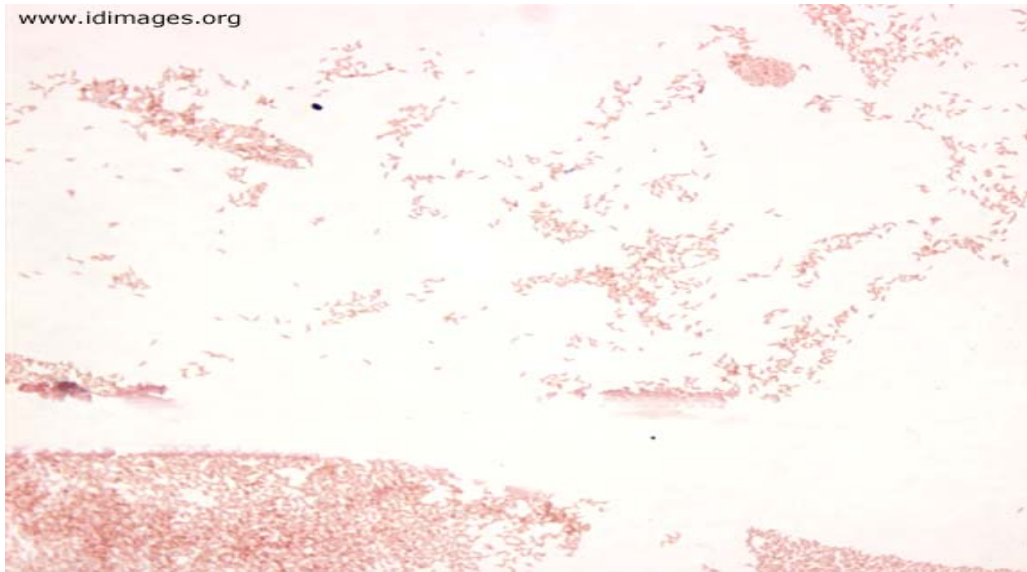


CAMPYLOBACTER SPECIES



**SPECIAL
MICROBIOLOGY**



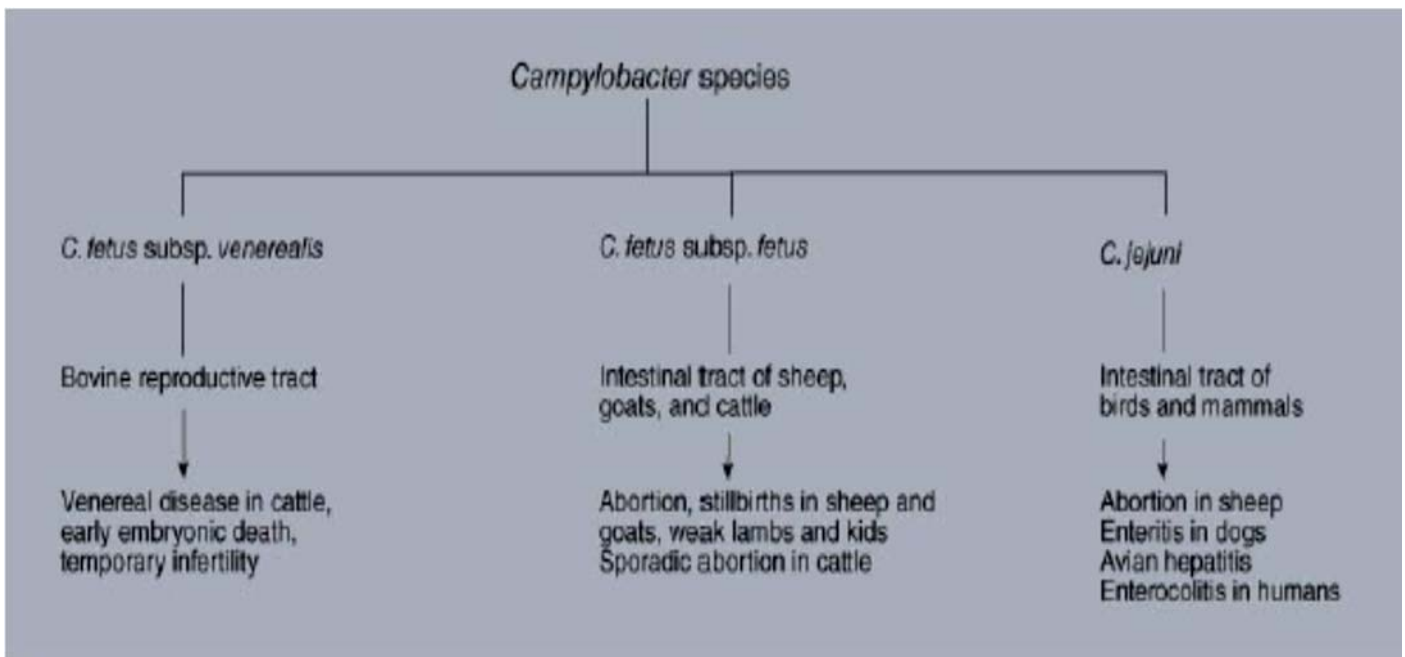
Instructor

Dr. Maytham Ihsan

Ph.D Vet Microbiology

GENERAL CHARACTERISTICS

- Slender, curved, Gram-negative rods in gull-winged shapes and spiral forms
- Motile, microaerophilic
- Most species grow on MacConkey agar
- Enhanced growth on enriched media
- Non-fermentative, oxidase-positive with variable catalase reactions
- Commensals of the intestinal tract and sometimes of the reproductive tract
- Pathogens in the reproductive and intestinal tracts



Campylobacter lari ... Intestine of birds, other animals & human

Can result in faecal contamination of water-courses and stored food.

Human..... cause enteritis

CULTURAL CHARACTERISTICS

- *Campylobacter* species are strictly microaerophilic, requiring an atmosphere of 5 to 10% oxygen and 1 to 10% CO₂ for growth.
- Most species grow on MacConkey agar.
- Grow well on selective enriched medium like:
 - Skirrow's Agar – Preston Selective Agar – Charcoal Based Agar ((All with selective antibiotics especially VANCOMYCIN, POLYMYXIN B & TRIMETHOPRIM))
- *Campylobacter fetus* subspecies *venerealis* (H₂S –ve)
- *C. fetus* subspecies *fetus* (H₂S +ve)
- *Campylobacter* species do not ferment carbohydrates.
- *Campylobacter fetus* subspecies *venerealis* and *C. fetus* subspecies *fetus* produce dewdrop appearance colonies whereas *C. jejuni* have watery appearance.
- Reduces Nitrate to Nitrite (NO₃ – NO₂).
- Hydrolyze hippurate (*Campylobacter jejuni* only).
- Methyl-Red-negative.
- Voges-Proskauer-negative.
- Urease-negative

***Campylobacter* species Antigens & Toxins**

- ✓ Microcapsule or S layer.
- ✓ Somtic LPS Ag with endotoxin action.
- ✓ Adhesins proteins.
- ✓ Flagellar heat-labile Ag.
- ✓ Type IV secretion system.
- ✓ Extracellular toxin (Cytolethal Distending Toxin CDT) and enterotoxins

Diagnostic procedures

- Clinical cases history of abortion & sterility especially in cows & sheep. Attention should be taken for differentiation from brucellosis.
- Specimens: stomach from aborted fetus, milk, placenta, spermatid fluids from carrier bulls.
- Gram's stain of the specimens to check for the gull-winged shapes.
- Immuno-fluorescent Ab technique staining of the affected specimens.
- Isolation on selective media with differentiation according to colonial morphology.
- Metabolic characteristics and antibiotic susceptibility pattern
- PCR-based methods.

