

Mustansiriyah University
College of science
Biology Dept.

Zoology

4th class

Zoonoses lab. (3)

Salmonella

Causes Infections in Humans and vertebrates,

- Enteric Fever (Typhoid fever)
- Gastroenteritis
- Septicemias,
- Carrier state.

Salmonella

A Very complex group

- Contains more > 2,000 spp
- Typed on the basis of Serotyping, and species typing
- Divided into two groups
 - 1 Enteric fever group
 - 2 Food poisoning group - Septicemias



Salmonella

Common carriers

Cattle

Cats

Dogs

Horses

Poultry

Transmission

-Direct contact
with animal
or feces

-Contaminated
food

Clinical Presentation

Chills

Fever

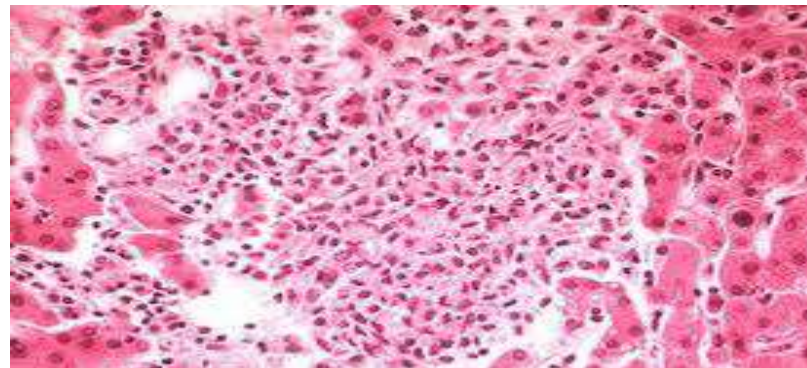
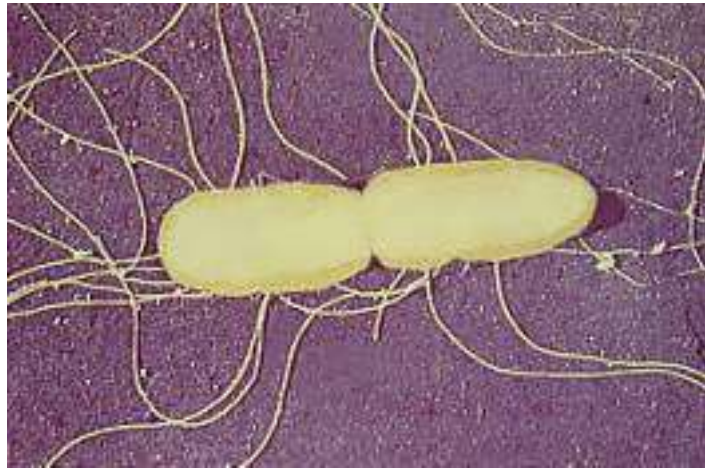
Headache

Diarrhea

Vomiting

Morphology of Salmonella

- Gram negative
- bacilli
- 0.5 / 3 microns,
- Motile by flagella



Resistance of Salmonella

- 55° c - 1 hour
- 60° c - 15 MT
- Boiling
- Chlorination,
- Pasteurization
- Destroy the Bacilli.

Diagnose Typhoid Fever

Diagnosis is made by any blood, bone marrow or stool cultures and with the Widal test (demonstration of salmonella antibodies against antigens O-somatic and H-flagellar).

- 1} Isolation of Bacilli. --
---A Gold standard
- 2} Diagnosis for presence of Antibodies,
Isolation from Feces and Urine



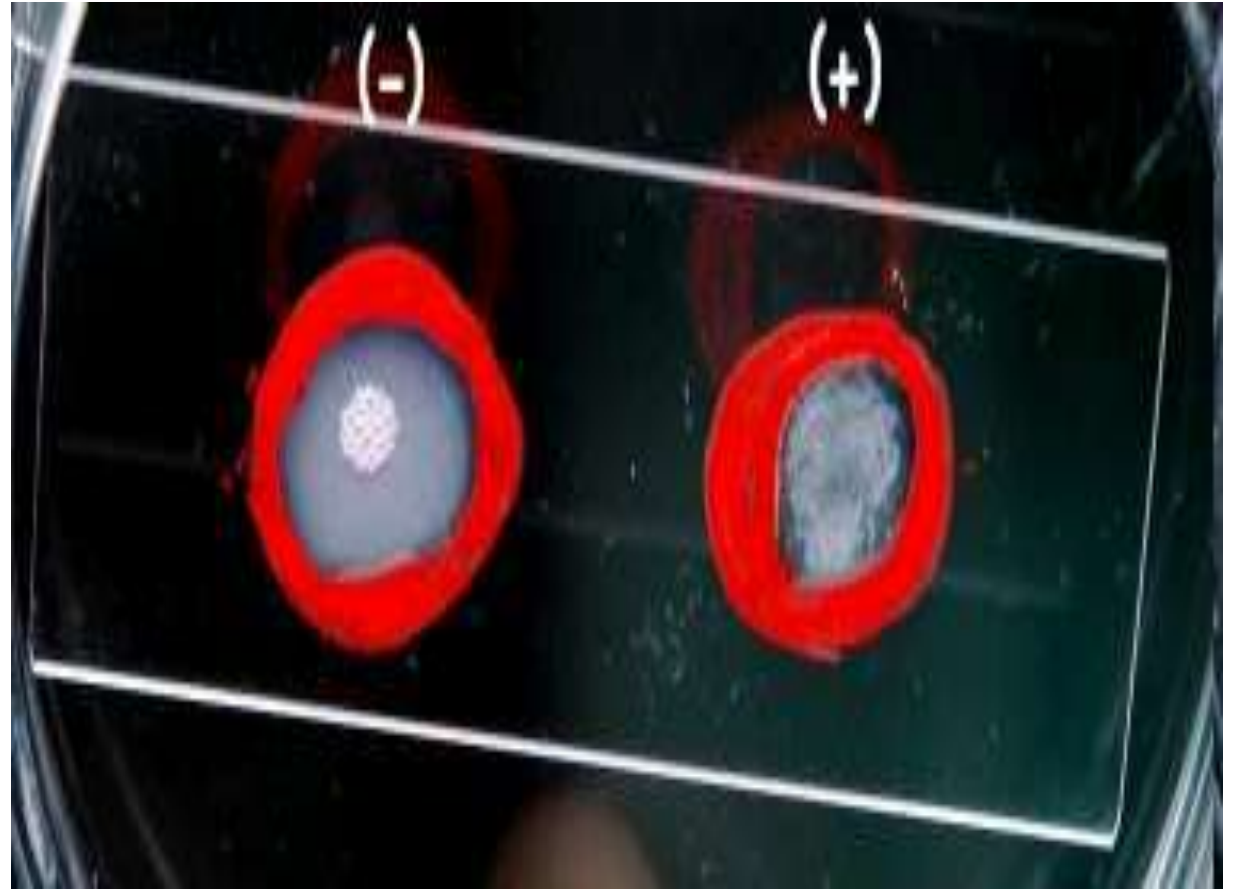
XLD agar



Mac Conkey's agar

Slide agglutination tests

- In slide agglutination tests a known serum and unknown culture isolate is mixed, clumping occurs within few minutes
- Commercial sera are available for detection of A, B, C1, C2, D, and E.



WIDAL Test - Tube agglutination test.

- Detects O and H antibodies
- Diagnosis of Typhoid and Paratyphoid
- Testing for H agglutinins in Dryers tubes, a narrow tube floccules at the bottom
- Testing for O agglutinins in Felix tubes.
- Incubated at 37° c overnight

diagnosing typhoid fever based on the fact that *antibodies in the blood of an infected individual cause the bacteria to bind together into clumps (the Widal reaction).*

Brucellosis

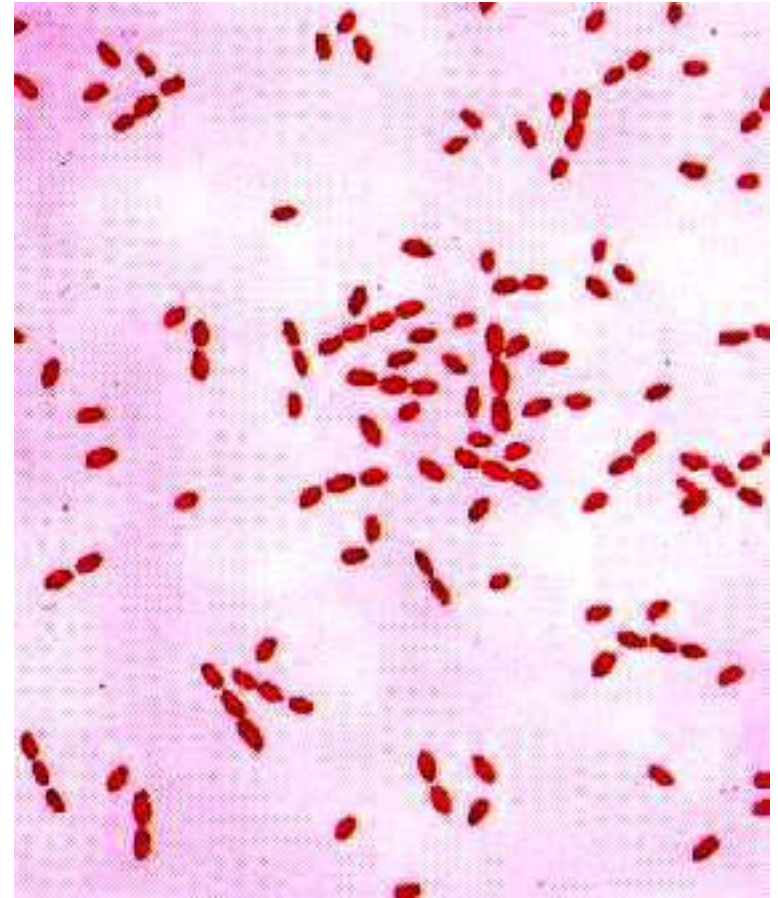
(Malta Fever)

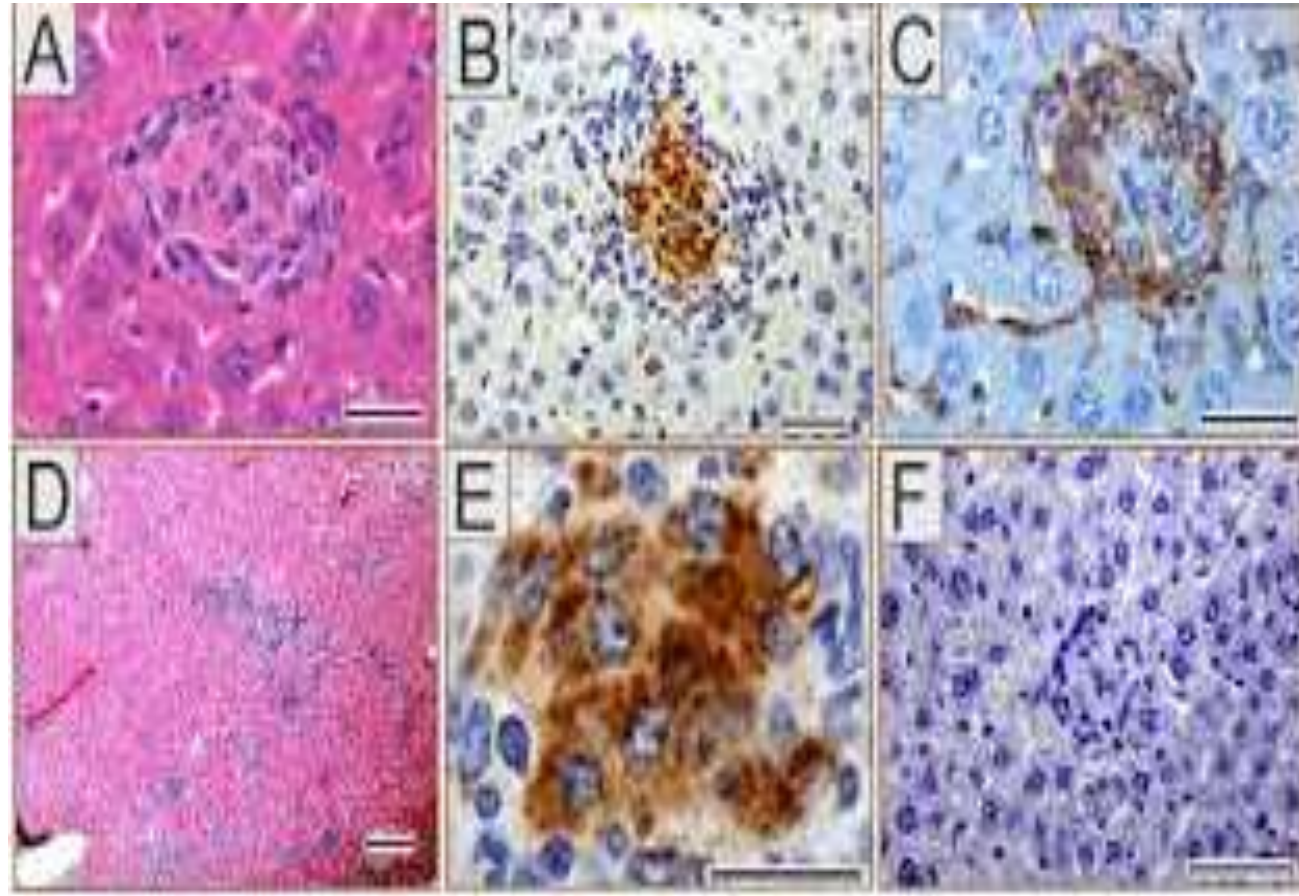
Brucellosis is a zoonosis primarily of domestic animals, causing a chronic debilitating septicemic disease leading to abortion.

The causal *Brucella* species are named after Sir David Bruce, who discovered the cause of one form of the disease while serving in Malta in 1887.

Brucella spp.

- Gram negative, intracellular coccobacilli bacteria.
- Non-motile, non-capsulated, non-spore forming.





Pathogenesis

1} Ingestion:

- Raw milk & unpasteurized dairy products.
- Rarely through undercooked meat.

2} Inhalation:

of placental or uterine discharges, blood and urine

3} Inoculation:

4} Person-to-person transmission is very rare



Who is at Risk?

➤ Occupational Disease:

- Cattle ranchers/dairy farmers.
- Veterinarians.
- Abattoir workers.
- Meat inspectors.
- Lab workers.

➤ Hunters.

➤ Travelers.

➤ Consumers of unpasteurized dairy products

Diagnosis

- 1-Clinical features.
- 2- Serology: brucella agglutinins in the blood.
- 3- Blood or tissue culture.
- 4- Polymerase Chain Reaction (PCR).

Serologic Tests

- Tube Agglutination
- Complement fixation
- Radioimmunoassay
- ELISA
- Rapid Agglutination
- Rose bengal test

Rose Bengal plate test

Is an agglutination test in which the brucella cells are bound to a dye

- Is quick and easy to read
- It is a useful screening test

