

Avian Salmonellosis

Disease Overview

Plan of Talk

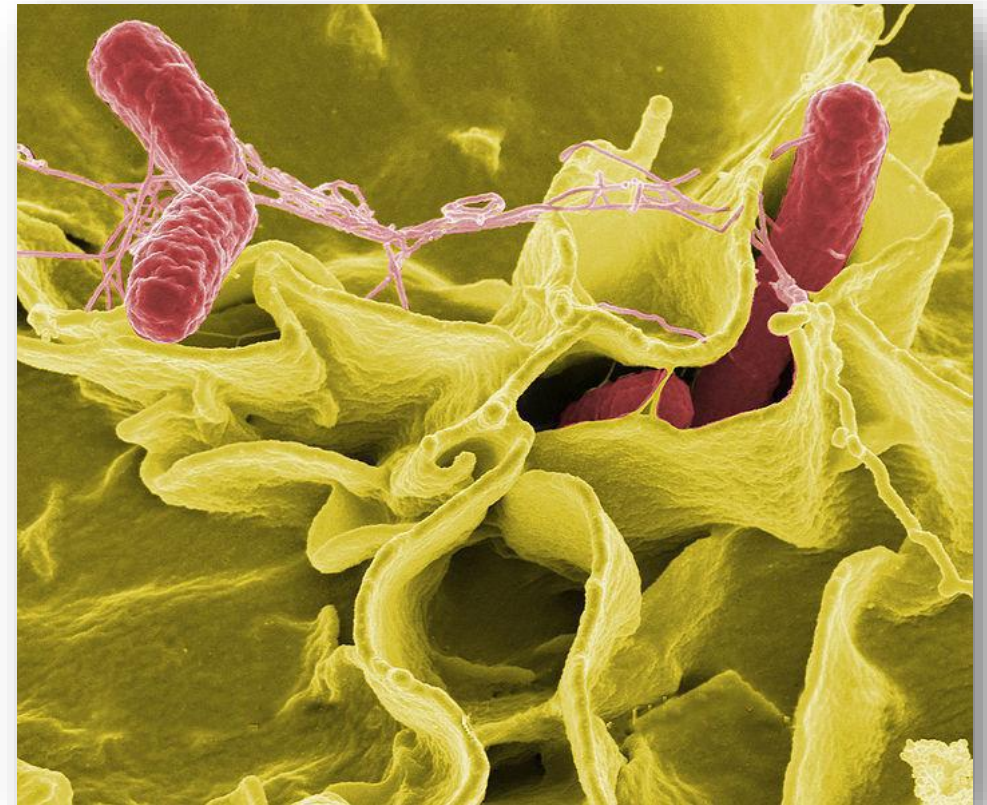
- › Salmonella overview
- › Etiology
- › Transmission
- › Clinical signs
- › Post mortem lesions
- › Treatment

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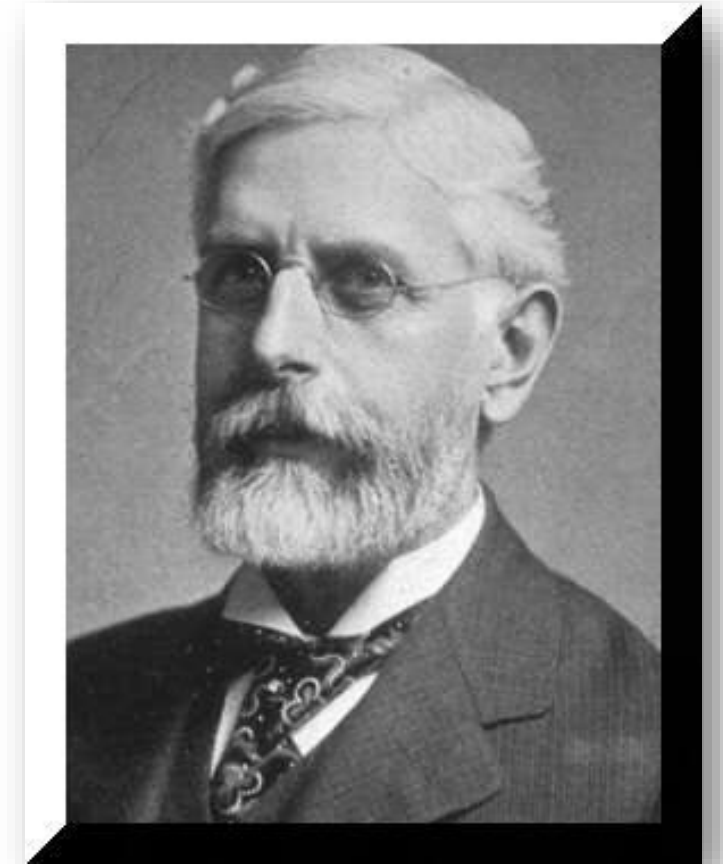
Salmonella Overview

- › **Salmonellosis** is any of several bacterial infections caused by species of *Salmonella*, ranging from mild to serious infections.



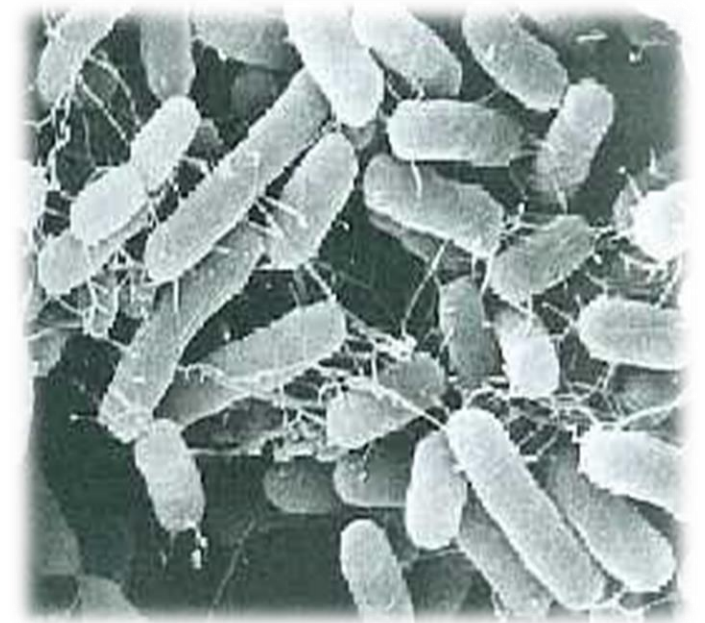
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- › "Salmonella", the name, derived from **Dr. Daniel Salmon**, a U.S. veterinary surgeon, who discovered and isolated the strain enterica or choleraesuis from the intestine of a pig in 1885.



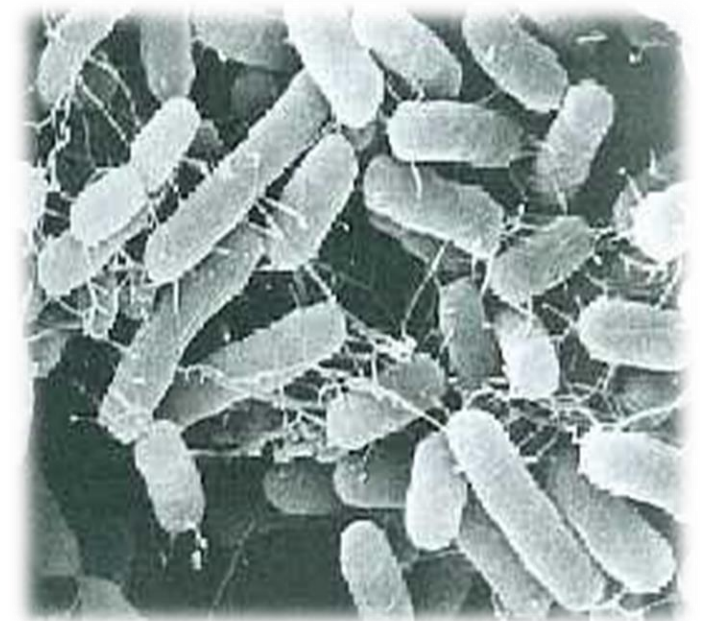
Cont. ...

- › Rod-shaped
- › Gram-negative
- › Facultative anaerobe
- › Non-spore-forming
- › It belongs to the same family as *Escherichia*, which includes the species *E.coli*.



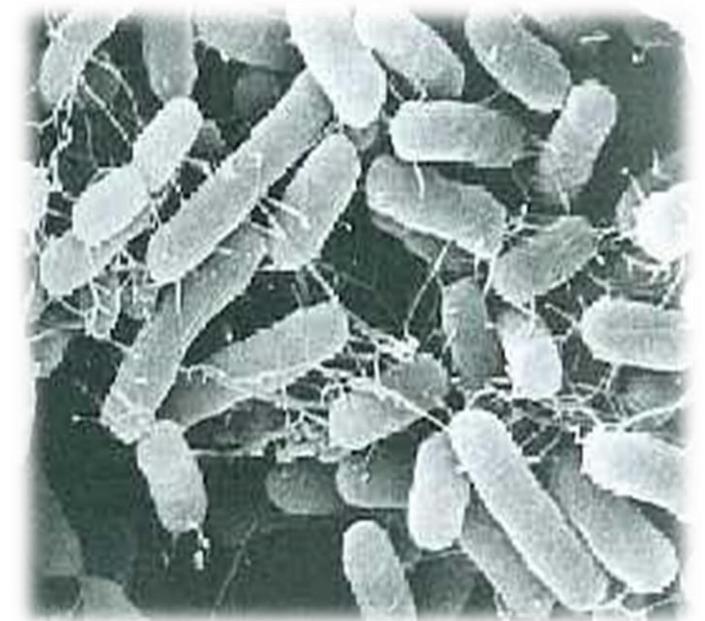
Cont. ...

- › Predominantly motile
- › Has peritrichous flagella (flagella that are all around the cell body)
- › Presence of fimbriae projections that aid attachment to the gut.
- › Ability to survive on diverse carbon sources.
- › Ability to synthesize aromatic amino acids.



Cont. ...

- › Refrigeration prevents growth but **does not kill bacteria.**
- › Heating at 57-60°C has shown to be effective in killing the bacteria.
- › Optimal growth: 37°C



Cont. ...

- › Bacterium of 2501 identified strains, as of 2001.
- › Many different diseases are caused by more than 1,400 serotypes of this bacteria genus.

Cont. ...

- › One major problem of Salmonella is its **colonization without disease**, which leads to contamination of meat prior to or at slaughter.
- › **Caeca** are the main sites of colonization, up to **10 log 10 CFU per gram** of fecal material may occur.
- › **Persistence** may occur for several months and be accompanied by **fecal shedding**.
- › Transmission through flocks appear due to coprophagic behavior (coprophagy is the consumption of feces).

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Avian Salmonellosis

- › Caused by serovars of salmonella enterica.

Types Of Salmonella Infection In Poultry

1. Colonization of GIT + little or no systemic invasion.
 - E.g. *S. Hadar*, *S. Infantis*
2. Colonization of GIT + transient systemic infection + occasional vertical transmission
 - E.g. *S. typhimurium*, *S. Enteritidis*
3. Systemic infection + little or no colonization of GIT + vertical transmission.
 - E.g. *S. Gallinarum*, *S. Pullorum*.

Systemic Disease Of Poultry

Specific Serovars

› S. Gallinarum

- Causes sever systemic disease of all age (fowl typhoid).
- Fowl Typhoid has **a mortality rate around 60%**.

› S. Pullorum

- Causes sever systemic disease in chicks with **mortality up to 90%**.
- Characterized by **white diarrhea**.
- Disease is less sever in older birds.
- A carrier state leading to **reproductive tract infection** may occur in hens with S. Pullorum leading to vertical transmission.

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Transmission

- › Salmonella transmission may be;
 1. Horizontal
 2. Vertical

Transmission - Horizontal

The bacteria is shed from an infected bird in:

1. Nasal and or ocular secretions.
2. Fecal material.
3. Feather dust.

Cont. ...

- › The organism remains **stable** outside the host body and **dries as a dusty substance**.
 - This dust or aerosol contaminates the air that is then inhaled by another possible host.
 - Susceptibility as well as the amount of contamination determine whether or not the new host becomes infected with the disease.
- › Transmission may be primarily through the air.
- › *Salmonella* spp. are mainly transmitted by the **fecal-oral route**.

Transmission - Vertical

- › Occurs in birds, with contamination of the vitelline membrane, albumen and the yolk of eggs.

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Clinical Signs

- › **General symptoms of Salmonella include:**
 1. Lethargy.
 2. Anorexia.
 3. Diarrhea.

- › **In chronic cases**
 1. Arthritis may be present.

- › **With high dose infections:**
 1. Excessive thirst.
 2. Conjunctivitis.
 3. Indications of liver, spleen, kidney or heart damage can occur.

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Post-mortem Lesions

- › In acute disease there may be few lesions.
 1. Dehydration.
 2. Enteritis.
 3. Focal necrotic intestinal lesions.
 4. Foci in liver.
 5. Unabsorbed yolk.
 6. Cheesy cores in caecae.
 7. Pericarditis.
 8. Perihepatitis.
 9. Misshapen ovules in the ovaries in *S.E.* infection.

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Treatment

- › Treatment of salmonella infections are more successful if **salmonella species is first determined.**
- › Once the particular species of salmonella has been identified, **the appropriate antibiotic can be administered.**
- › The frequently found Salmonella strains are sensitive to many commonly available antibiotics.

Treatment

1. Antibiotics
2. Antidiarrheal

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