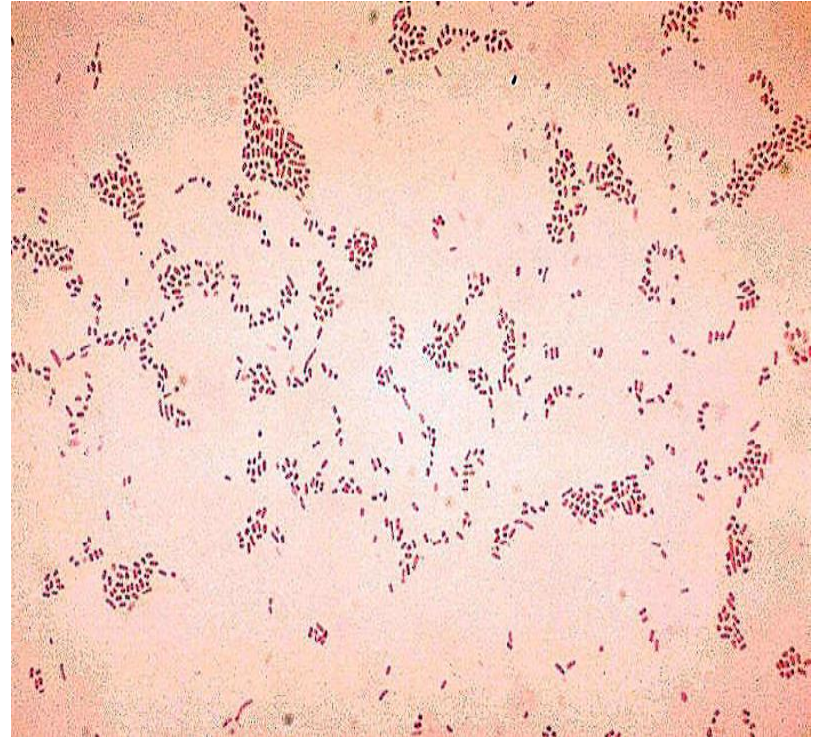


ACTINOBACILLUS

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General Characteristics

- *Actinobacillus* species
 - non-motile,
 - non-spore forming,
 - Gram-negative rods
- Sometimes coccobacillary in appearance.
- Facultative anaerobes
- Ferment carbohydrates producing acid but not gas.
- Most species are urease- and oxidase-positive.



Usual habitat

- Actinobacilli are commensals on **mucous** membranes
 - upper respiratory tract
 - oral cavity
- cannot survive for long in the environment,
- carrier animals play a major role in transmission
- Actinobacilli exhibit some host specificity
- mainly pathogens of farm animals.

Growth and reactions on MacConkey agar

- *A. lignieresii*, *A. equuli* and *A. suis* grow well on MacConkey agar.
- Colonies of *A. lignieresii* are initially pale turning pink after 48 hours.
- *A. equuli* and *A. suis* ferment lactose, producing pink colonies.
- *A. pleuropneumoniae* and *A. seminis* do not grow on MacConkey agar

Important pathogens

Species	Disease
<i>A. lignieressi</i>	Wooden tongue in cattle
<i>A. pleuropneumoniae</i>	Pleuropneumonia in pig
<i>A. equuli</i>	Sleepy foal disease
<i>A. suis</i>	Septicaemia; Pneumonia in piglets
<i>A. seminis</i>	Epididymitis in ram

Actinobacillosis- Wooden tongue

- *Actinobacillus lignieresii* - is a commensal of the oral cavity and the intestinal tract.
- Enter tissues through erosions or lacerations in the mucosa and skin.
- A chronic pyogranulomatous inflammation of soft tissues
- Induration of the tongue, referred to as timber tongue.
- Also affects *oesophageal groove and the retropharyngeal lymph nodes*

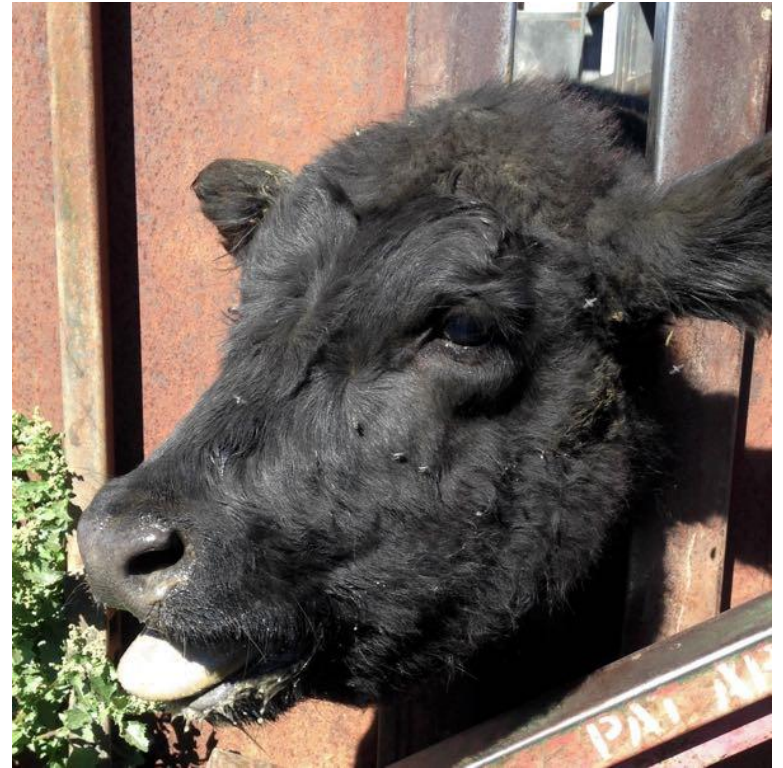
Actinobacillosis- Wooden tongue

- Difficulty in eating and drool saliva
- Esophageal groove can lead to intermittent tympany
- Enlargement of the retropharyngeal lymph nodes can cause difficulty in swallowing
- Lesions may be found on the head, thorax, flanks and upper limbs.



Treatment and Control

- Sodium iodide parenterally or potassium iodide orally
- Potentiated sulphonamides or a combination of penicillin and streptomycin
- Oral isoniazid for **30** days for refractory lesions.
- Rough feed or pasture should be avoided.



Sleepy foal disease

- Sleepy foal disease is an acute, potentially fatal septicaemia of newborn foals
- Caused by *Actinobacillus Equuli*
- May cause abortion, septicaemia and peritonitis, in adult horses
- The organism is found in the reproductive and intestinal tracts of mares.
- Foals can be infected in *utero* and *after birth via the umbilicus*.

Sleepy foal disease

- Affected foals are febrile and recumbent. Death usually occurs in 1 to 2 days.
- Recovered Foals develop polyarthritits, nephritis, enteritis or pneumonia.
- Foals dying within 24 hours of birth have petechiation on serosal surfaces and enteritis.
- Meningoencephalitis can be detectable histologically
- Foals which survive for 1 to 3 days have typical pin-point suppurative foci in the kidneys.

Treatment and Control

- Unless the disease is detected early, antimicrobial therapy is of little benefit.
- The organism is usually susceptible to streptomycin, tetracyclines and ampicillin
- Supportive treatment includes blood transfusion and bottle-feeding with colostrum.
- Mares which have had affected foals should be monitored closely at subsequent foalings.
- Prophylactic antibiotic therapy may be considered for newborn foals.

Pleuropneumonia of pigs

- Caused by *A. pleuropneumoniae*,
- Affect susceptible pigs of all ages.
- Worldwide occurrence
- highly contagious disease, *primarily in pigs under 6 months of age*,
- Incidence more in intensive rearing practices



Pathogenesis and pathogenicity

- Capsules antiphagocytic and immunogenic,
- Fimbriae and other adhesins
- Cytotoxins producing pores in cell membranes.
- Neutrophils -damaged and release lytic enzymes

Clinical signs and epidemiology

- ***Subclinical carrier pigs***, -tonsillar tissues.
- Poor ventilation and sudden drops in ambient temperature
- Aerosol transmission occurs in confined groups.
- some pigs may be found dead and others show
- ***dyspnoea, pyrexia, anorexia and a disinclination to move.***
Blood-stained froth
- may be present around the nose and mouth, and many pigs show cyanosis.

Clinical signs and epidemiology

- Pregnant **sows** may abort.
- Morbidity rates can range from 30-50% and case fatality rates may reach 50%.
- *Pasteurella multocida* and Mycoplasmas
- At post-mortem areas of ***consolidation and necrosis are found in the lungs*** along with fibrinous pleurisy.
- ***Blood-stained froth may be found in the trachea and bronchi.***

Treatment & Control

- As antibiotic resistance is encountered in some strains, chemotherapy should be based on the results of antibiotic susceptibility testing.
- Prophylactic administration of antibiotics to in-contact pigs may limit the severity of clinical disease.
- Polyvalent bacterins may induce protective immunity but fail to prevent transmission or the development of a carrier state.
- **A** subunit vaccine containing toxoids of the three *A. pleuropneumoniae* toxins and capsular antigen has been developed (Valks *et al.*, 1996).

***Actinobacillus suis* infection of piglets**

- *Actinobacillus suis* may be present in the *upper respiratory tract of SOWS*
- Piglets *become infected by aerosols or possibly through skin abrasions.*
- The infection occurs mainly in young pigs under 3 months of age.
- The disease is characterized by septicaemia and rapid death.
- Mortality may be up to 50% in some litters.

***Actinobacillus suis* infection of piglets**

- Clinical signs include:
 - fever,
 - respiratory distress,
 - prostration and paddling of the forelimbs
- Petechial and ecchymotic haemorrhages occur in many organs, interstitial pneumonia, pleuritis, meningo-encephalitis, myocarditis and arthritis
- An unusual form of the infection in mature pigs - skin lesions resembling those of ***swine erysipelas***

THANKS