RHODOCOCCUS

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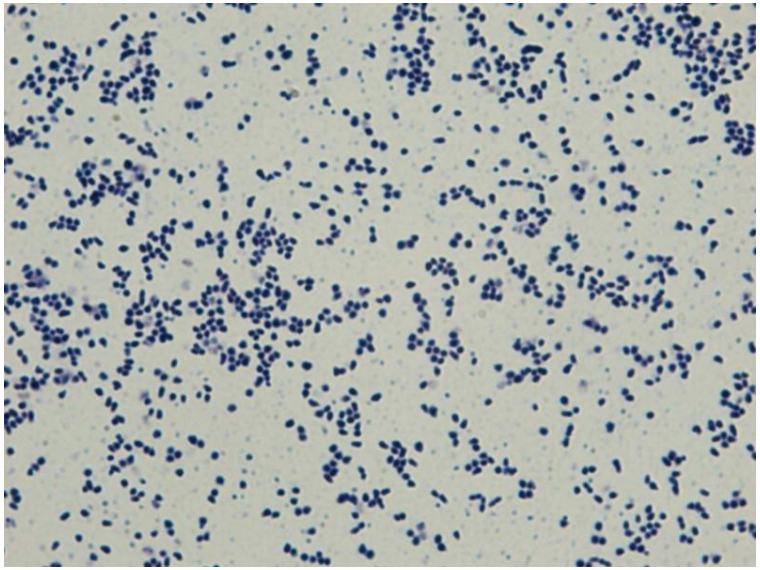
Rhodococcus

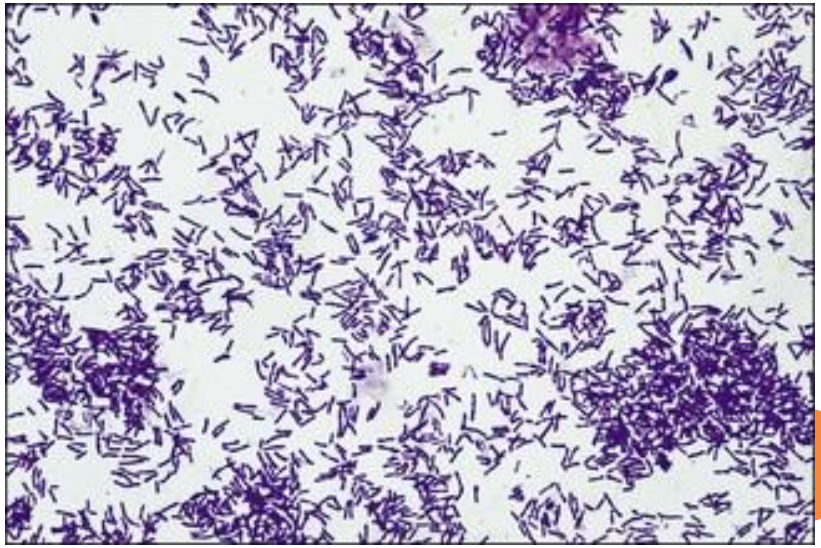
- Domain: Bacteria
- Phylum: Actinomycetota
- Class: Actinomycetia
- Order: Mycobacteriales
- Family: Nocardiaceae
- Genus: Rhodococcus
  Zopf 1891

Introduction

- *Rhodococcus equi* formerly called *Corynebacterium equi* is a Gram-positive coccus or as a rod, aerobic soil saprophyte which occurs worldwide.
- It is capsulated and sometimes weakly acid fast. It is an opportunistic pathogen of foals under 6 months of age.
- Its cell envelope consists of mycolic acids, polysaccharides and glycolipids that form around a unique periplasmic space.
- *Rhodococcus equi*, originally discovered in horses by Magnusson (1923)

- *Rhodococcus equi* grows on non-enriched media such as nutrient agar and produces characteristic mucoid salmon-pink colonies, features reflecting capsule formation and pigment production.
- Some strains of *R. equi* appear as cocci and others as rods up to 5um in length.
- The organism is non-motile, catalase-positive, oxidase-negative and weakly acid-fast.





Usual habitat

- *Rhodococcus equi* is an inhabitant of both soil and the intestinal tracts of animals. It can replicate at warm temperatures in soils enriched with faeces of herbivores.
- It is facultative intracellular.

Morphological characters

- Rhodococcus, implies the coccus shape of the organisms, the bacteria surprisingly show extensive polymorphism.
- At the early stage it is rod-shaped and filamentous, but when grows its breaks into a short rod or coccus

Salmon-pink colonies

Clinical infections

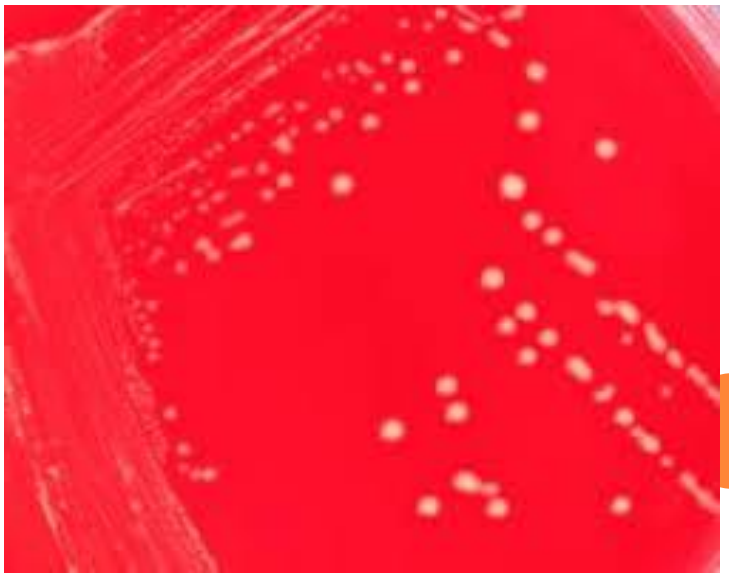
- Suppurative bronchopneumonia of foals is the major disease caused by this pyogenic organism.
- Superficial abscesses due to *R. equi* have been recorded in horses over 6 months of age.
- Pigs, cats and cattle can occasionally be infected

Specimens

- Specimens for laboratory examination include tracheal aspirates and pus from lesions.

Cultural characters

- Blood and MacConkey agar plates inoculated with suspect material are incubated aerobically at 37°C for 24 to 48 hours.
- Colonies on blood agar are non-haemolytic, salmon-pink and mucoid.
- Absence of growth on MacConkey agar.
- Unreactive in the oxidation-fermentation test and in sugar fermentation tests.
- CAMP-test positive



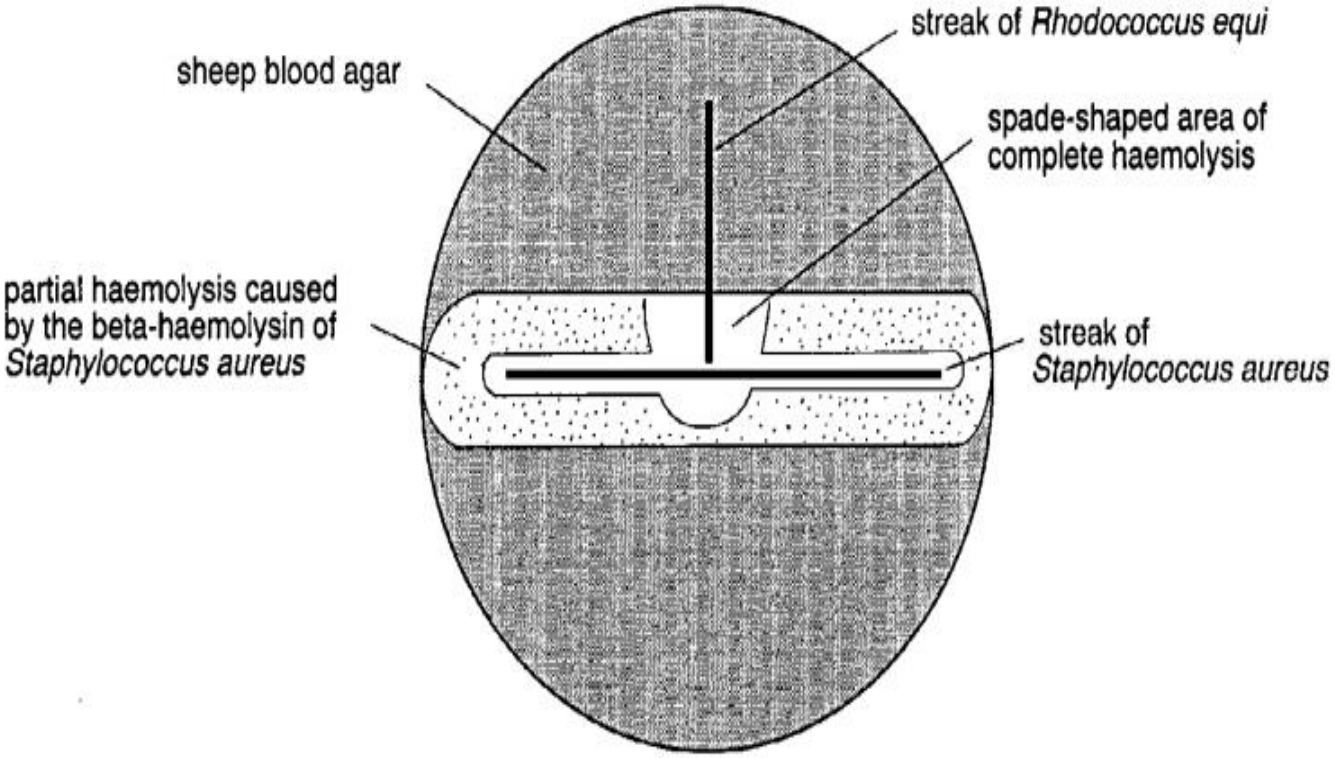


Figure 11.2 CAMP test. *Rhodococcus equi* produces a factor which completely lyses the red cells previously damaged by the beta-haemolysin of *Staphylococcus aureus*, producing a spade-shaped pattern of complete haemolysis which extends across the streak of *S. aureus*.

SUPPURATIVE BRONCHOPNEUMONIA OF FOALS

- It is generally acquired by inhalation of dust contaminated with *R. equi*. The organism is often present in large numbers in the faeces of healthy foals under 3 months of age, and can also be isolated from the faeces of older horses and many other mammals and birds.
- Granulomatous ulcerative enterocolitis and mesenteric lymphadenitis sometimes occur when affected foals swallow sputum containing large numbers of *R. equi*.

Control

- No commercial vaccines are available.
- On farms where the disease has occurred, foals should be kept under observation and examined clinically twice weekly until they are 4 months of age.
- Hyperimmune serum from the dam, administered to the foal in the first month of life, is claimed to reduce the prevalence of disease on some farms.
- Prevention of a buildup of *R. equi* in the environment of young foals is desirable:

-Foal manure should be removed from pastures at frequent intervals.

-Foals and their dams should be moved regularly to fresh pasture.

-Dusty conditions in paddocks and holding yards should be minimized.

Further Readings

- Clinical Veterinary Microbiology 2nd Edition 2013 By Bryan Markey
- Veterinary Microbiology and Microbial Disease