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Prototheca spp.: A Practical Summary for Controlling Mastitis

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Prototheca spp. are mastitis-causing pathogens that are classified as colorless algae. *Prototheca* spp. will appear on blood agar as creamy-white or grayish-white pasty colonies after 24 to 36 or more hours of incubation. Colonies could be confused with coagulase-negative staphylococci or yeast but can be differentiated when Gram staining because *Prototheca* spp. will exhibit spherical or oval sporangia with or without endospores.

Information in this publication was summarized from the National Mastitis Council's Laboratory Handbook on Bovine Mastitis (Hogan et al. 1999).

Where are these organisms found?

Reservoirs of *Prototheca* spp. are soil, plants, streams, stagnant ponds, and other water sources. Other reservoirs include bovine and porcine feces, barns, and holding pens.

How does *Prototheca* spp. spread to the mammary gland?

The spread of *Prototheca* spp. can occur through environmental contact, particularly from water sources and splash areas. Another form of exposure comes from improper teat sanitation prior to treatment of the mammary gland. When a cow becomes infected, *Prototheca* spp. can be transferred from cow to cow at milking.

How can you prevent and control mastitis caused by *Prototheca* spp.?

Prototheca spp. are found in water sources, so eliminating splash/puddle areas, access to wet areas or standing water, and access to manure will help to prevent the exposure of *Prototheca* spp. to the mammary gland.

Because the environment can be contaminated with *Prototheca* spp., proper teat sanitation prior to intramammary treatment should prevent the exposure of the mammary gland to this organism. When infusing the mammary gland with a mastitis treatment or at dry off with a dry cow therapy product, the teats must be clean and dry. After the udder is milked out, use a separate alcohol wipe for each teat. Scrub each teat thoroughly until clean. Infuse the teat with a single-dose sterile tube or cannula. Do not reuse teat cannulas or tubes. Consider inserting the teat cannula only partially into the teat canal.

Prototheca spp. can be contagious and do not respond to antibiotics, so it is recommended that infected cows be eliminated from the herd to prevent the spread of *Prototheca* spp. to other cows at milking and to prevent contamination of the environment. Cows infected with *Prototheca* spp. should be segregated from the herd and milked last or with a separate milking unit until they can be removed from the herd.

When are *Prototheca* spp. mastitis infections most likely to occur?

Mastitis infections from *Prototheca* spp. can occur at any time during the lactation but will most likely occur when cows have access to wet areas such as stagnant ponds. Additionally, dirty infusions during treatment for another mastitis pathogen or when administering dry cow therapy can also introduce this pathogen into the mammary gland. Because *Prototheca* spp. can be contagious, once a cow becomes infected, other cows could be at risk during milking.

How likely is *Prototheca* spp. mastitis to be cured?

Prototheca spp. can cause chronic infections that do not respond to antibiotic therapy.

Quick Notes

- *Prototheca* spp. are environmental pathogens typically found in soil, streams, and stagnant ponds.
- Preventing cattle from accessing wet areas and providing proper teat sanitation during intramammary teat infusions are key in preventing infection.
- No treatment currently exists for *Prototheca* spp. mastitis; therefore, infected cows will need to be eliminated from the herd.
- Cows infected with *Prototheca* spp. should be segregated and milked last or with a separate milking unit until they can be removed from the herd.

References

Hogan, J. S., R. N. Gonzalez, R. J. Harmon, S. C. Nickerson, S. P. Oliver, J. W. Pankey, and K. L. Smith. (1999). *Laboratory Handbook on Bovine Mastitis*. Madison, WI: National Mastitis Council.

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