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Proteus spp.: A Practical Summary for Controlling Mastitis

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Proteus spp. are uncommon environmental mastitis pathogens that have been known to cause outbreaks. *Proteus* spp. are Gram-negative and similar in structure to other coliform mastitis pathogens. Little is known about how *Proteus* spp. infect the mammary gland, however procedures effective in controlling coliform mastitis pathogens should apply to *Proteus* spp. as well. When grown on blood agar, *Proteus* spp. have been found to swarm on the plate and spread across it.

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 *Proteus* spp. are the cow's environment, including bedding, feed, and water.

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

It is believed that the spread of *Proteus* spp. can occur through environmental contact. This includes, but is not limited to, organic bedding, dirty or soiled stalls, and muddy lots and/or standing water.

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

The primary way to prevent infection by *Proteus* spp. is by keeping cows clean and dry so as to decrease exposure as well as practicing proper teat sanitation prior to milking.

Proper milking procedures, including the use of effective pre-milking teat disinfectants along with thoroughly drying teats prior to milking, will help to reduce the number of new infections. Following forestripping, the use of an effective and proven pre-milking teat disinfectant is particularly important for this mastitis-causing pathogen. The pre-milking teat disinfectant should remain on the teats for 30 seconds prior to removal with either a paper towel or a single-use, clean, dry cloth towel. Following these guidelines, the time from the start of manual stimulation (forestrip or wipe) to unit attachment should be in the range of 60 to 120 seconds. This will allow the appropriate time for milk letdown.

After unit detachment, an effective, proven post-milking teat disinfectant should be applied with coverage over at least two-thirds of the teat barrel. In herds with a particular environmental mastitis problem, use of a barrier teat dip is recommended.

Using inorganic bedding such as sand, cleaning stalls frequently, reducing overcrowding, and preventing access to wet areas will help to prevent and control *Proteus* spp. mastitis. Immunization of cows with a coliform mastitis vaccine, such as J5, can reduce the severity of *Proteus* spp. mastitis. Please consult your herd veterinarian before implementing a vaccination protocol.

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

New infections can occur at any time during lactation. Cows in early lactation are at increased risk for new infections due to the increased stress and immune suppression associated with the postpartum period. *Proteus* spp. have been found to cause herd outbreaks, and infections tend to be chronic, therefore making prevention key.

How likely is *Proteus* spp. to be cured?

Proteus spp. typically cause chronic, severe infections that do not respond well to antibiotic therapy. Therefore, emphasis needs to be placed on prevention more than treatment.

Quick Notes

- *Proteus* spp. are environmental coliform mastitis-causing pathogens that are found in bedding, feed, and water.
- Little is known about how *Proteus* spp. infect the mammary gland, but control measures effective against other coliforms appear to be satisfactory.
- Using inorganic bedding, such as sand, as well as reducing overcrowding, using effective pre-dips, and cleaning stalls frequently will help to control this pathogen.
- Using a J5 vaccine will reduce the severity of *Proteus* spp. mastitis.
- *Proteus* spp. do not respond well to antibiotic therapy; thus, prevention is key.

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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