

Bactoproof™ Mastitis PCR

Technical Guidelines



Bactoproof™ is a convenient and easy to use system for testing milk samples for bacterial causes of mastitis by PCR. The test allows detection of 16 common mastitis pathogens in a milk sample. The pathogens covered would be expected to be responsible for over 99% of mastitis cases.

Milk samples should be submitted with added preservative tablet.

Testing by this method has a number of advantages over conventional culture:

- Fast results - samples can be processed in as little as 6 hours in the laboratory
- More than one pathogen in a sample can be reliably and routinely detected
- Results for each mastitis pathogen are quantitative making interpretation of the relative significance of results easier
- Low levels of one organism are not physically obscured by another less fastidious organism which may be the case with traditional culture-based techniques
- Greater sensitivity - 'No growths' much lower than other methods
- Testing of samples with preservative means contaminant organisms do not have chance to grow in the period between sampling and testing and results are more likely to represent significant organisms

As is the case for most diagnostic techniques, mastitis PCR results must be interpreted in the context of the clinical signs and herd history. PCR tests identify the DNA of the pathogen involved whereas culture detects live bacteria. Mastitis PCR will identify some pathogens not routinely picked up on culture, culture will identify some pathogens not detected by the PCR.

Diagnostic testing is an important part of the mastitis control plan on a farm, and results can be used to inform therapy based on what bacteria are detected, and where antimicrobial therapy is appropriate, whether the bacteria detected are Gram positive or Gram negative. Mastitis control also depends on other factors including hygiene at milking and in the cows' environment.

Tests are set up on a Tuesday and Thursday. All sample received before 9 a.m on these days will be included on the test with results available the same day.

Bactoproof™ Test Interpretation Guidelines

Bactoproof™ can detect 16 key mastitis pathogens and β-lactamase resistance. The test detects the organisms responsible for over 99% of mastitis cases.

For each mastitis pathogen the results are reported on a simple scale according to the number of bacteria detected:

Result - bacterial DNA detection	Interpretation
-	Negative, not detected
+	Positive, low numbers
++	Positive, moderate numbers
+++	Positive, high numbers

In addition if Staphylococcus species are detected then the PCR test also detects the β lactamase penicillin resistance gene, recorded on a simple +/- basis.

Organism	Gram staining	Organism	Gram staining
Staphylococcus aureus	Gram positive	Mycoplasma bovis	Gram negative
Staphylococcus species (e.g., Staph intermedius)		Mycoplasma species	
Streptococcus dysgalactiae		E. coli	
Streptococcus agalactiae		Klebsiella species	
Streptococcus uberis		Serratia marcescens	
Enterococcus species			
Corynebacterium bovis		Prototheca	N/A for therapeutic decision
Trueperella pyogenes		Yeasts	
P. indolicus			