



Low-Cost Mastitis Test Speeds Detection

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Technology description

Bovine mastitis is a persistent inflammation of the udder usually caused by bacterial infections. It can be spread through contact with contaminated milking equipment or other materials. The only treatment for the disease is long-acting antibiotics. Milk from treated cows cannot be marketed until the drugs have cleared their systems.

Mastitis costs the U.S. dairy industry up to \$2 billion every year. Presently, milk from cows suspected of having the disease must be cultured to determine whether pathogenic bacteria are present. This testing requires a lab to plate the sample and wait up to two days.

A rapid, low-cost test to catch the disease early is needed to mitigate milk losses and prevent the spread of infection through the herd. UW–Madison researchers have developed a new test that takes less than two hours and can be used in the field or lab to simultaneously detect the eight most important mastitis pathogens. The assay works on DNA extractions from milk or other samples (e.g., blood or environmental) using loop-mediated isothermal amplification (LAMP) that can be performed using only the kit and a heat block.

The test involves a rapid DNA extraction method (~ 35 minutes) followed by a 47-minute running time. The researchers developed a 'master mix' reaction solution for all eight pathogen-specific primers. The new assay can test for: *Staphylococcus aureus*, *Streptococcus agalactiae*, *Streptococcus dysgalactiae*, *Streptococcus uberis*, *E. coli*, *Klebsiella pneumonia*, coagulase-negative *Staphylococci* and *Mycoplasma bovis*. The result is a simple yes/no.

The Wisconsin Alumni Research Foundation (WARF) is seeking commercial partners interested in developing a single-step kit for detecting up to eight bacterial strains that cause bovine mastitis and other serious diseases in cattle.

Additional Information

WARF reference number P04263US describes a method for removing mastitis-causing bacteria from milking machine liners.

<http://www.warf.org/technologies/summary/P04263US.cmsx>

Application area

Diagnosing bovine mastitis

Could also be used to test for respiratory disease and arthritis (caused by *M. bovis*), bovine digital dermatitis and other conditions in cattle

Field kit or in-line test for farmers, laboratories and veterinary practices

Advantages

Detects up to eight bacterial pathogens under the same conditions

Saves time and costs

Analyzes milk directly without cell culturing

Suitable for field/lab diagnostics

Could be used by farmers around the world with access to electricity

No need for thermocycler

Institution

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