

Improved PCR Diagnostic for detection of Paratuberculosis (or Johne's disease)

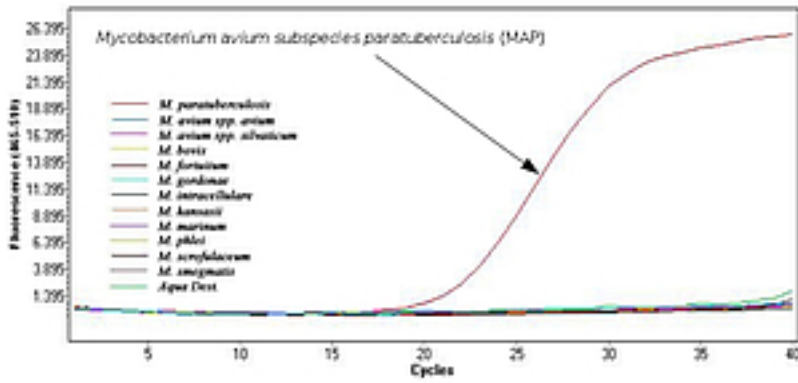
Mycobacterium avium subspecies paratuberculosis (MAP) is the organism responsible for a chronic, intestinal inflammatory disease found in domestic livestock, including cattle, deer, sheep and goats. Infection generally occurs early in life, and many infected animals become chronic carriers. Unless testing is done, paratuberculosis or Johne's disease can exist undetected in a herd for years. Furthermore, MAP has also been implicated as a possible cause of Crohn's disease in humans. Scientists at the University of Göttingen developed an improved PCR diagnostic test for fast and early detection of Paratuberculosis.

Challenge

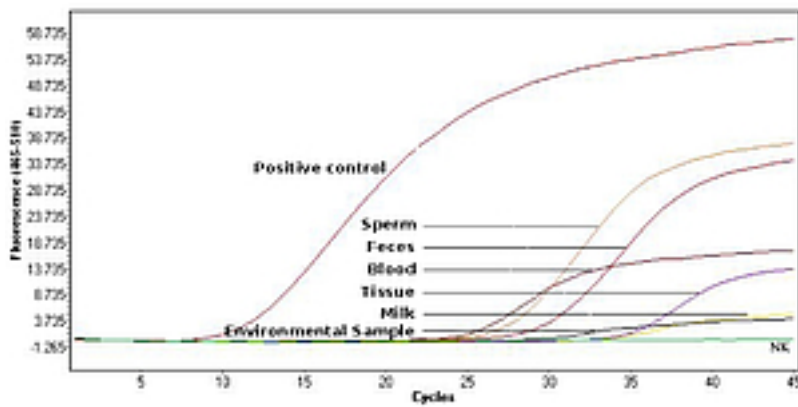
Unless measures are taken to control or eradicate the organism, the prevalence of infection gradually increases in the herd and greater numbers of animals become clinically ill. Economic impact of Johne's disease in livestock may include premature culling, decreased milk production, possible breeding problems and loss of valuable animals and genetic potential.

Our Solution

Scientists at the University of Göttingen developed an improved PCR diagnostic test for fast and early detection of Paratuberculosis. This test has great sensitivity, whereby maintaining robustness and is extremely specific for MAP. Proof of concept has been achieved in various samples, including feces, blood, milk, sperm and tissue samples.



Proof of Specificity: TaqMan real-time PCR only detects MAP. Source: Pia Münster.



Proof of Flexibility: TaqMan real-time PCR detection from various samples. Source: Pia Münster.

Advantages

- New and improved PCR diagnostic test for fast and early detection of Paratuberculosis.

- Highly specific for MAP detection.
- Great sensitivity, whereby maintaining robustness ideal for point-of-care diagnostic.
- Successfully tested in feces, blood, milk, sperm and tissue samples.
- Rapid detection with qPCR technology – less time and less costs.
- Better performance than current ELISA tests.
- Higher sensitivity and less false negatives compared to current qPCR kits.

Applications

- Diagnostic test for early MAP detection in:
 - Domestic livestock, including cattle, deer, sheep and goats.
 - Exotic ruminants (zoos).
 - Human patient samples due to high specificity and sensitivity.

Developmental Status

In vivo PoC on domestic livestock.

Patent Status

The international patent application (WO2013160434A1) has been nationalized in Europe (EP2841596A1), USA (US2015111206A1), Canada (CA2871683A1) and China (CN104685068A)(Applicant: Georg-August-Universität Göttingen, public law foundation). Patents have been granted in EP (EP2841596B1, validated in DE, FR, GB, PL, NL, IT, ES, IE, DK, BE, AT, SE, CH) and USA (US10151004B2).

References

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