

STARTCHECK®: A NEW PCR DIAGNOSTIC TOOL FOR BOVINE MASTITIS MANAGEMENT

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INTRODUCTION

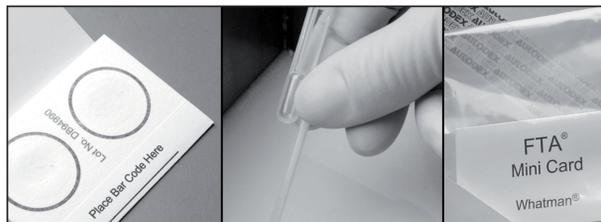
PCR-based methods are now being used increasingly in bovine mastitis diagnostics with good reliability as a complement to bacterial culture⁽¹⁾.

STARTCHECK® was recently proposed as a fast and reliable diagnostic tool for the detection of major mastitis causing pathogens in bulk tank milk (BTM) samples⁽²⁾. The aim of this study was to further test STARTCHECK® using BTM samples coming from different dairy herds in the EU.

MATERIAL AND METHODS

A total of 911 BTM samples were collected from different European countries, between March 2010 and June 2011. BTM samples were collected (250 µl each) and impregnated in FTA® cards following manufacturer's instructions. Within 48 hours, samples were shipped by ordinary airmail to Diagnos Laboratory in Amer, Girona, Spain (Figure 1).

Figure 1. STARTCHECK® Kit: FTA® card, 250 µl pipette, envelope and plastic bag with desiccant.



Samples were tested for the presence of *Staphylococcus aureus*, Coagulase Negative Staphylococci, *Escherichia coli*, and coliform bacteria using a Real-Time Multiplex PCR (RT-PCR) assay previously described⁽²⁾. Cycle threshold (Ct) values were recorded for each bacterial target. Samples with Ct values below 37 were considered positive. The most recent bulk tank somatic cell count (BTSCC) was available for all herds included in the study.

A Chi-square test was performed for all four different bacteria to check the relationship between BTSCC (<250,000 cells/ml, >250,000 cells/ml) and PCR results (POS, NEG).

RESULTS

Of 911 samples tested, 676 (74.2%) were positive for at least one bacteria and 235 (25.8%) were negative. The relationship between RT-PCR and BTSCC for each of the bacteria tested is illustrated in Figures 2-5.

Figure 2. *Staphylococcus aureus* RT-PCR versus BTSCC ($p = 0.042$).

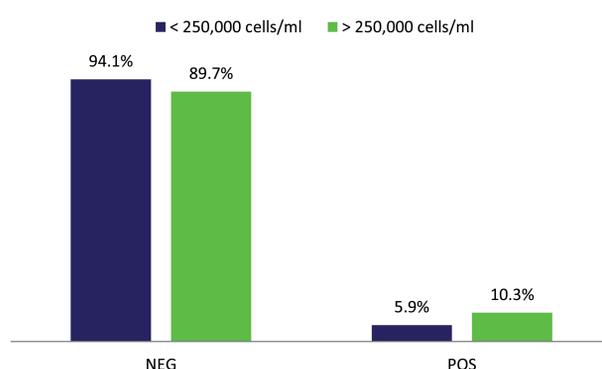


Figure 3. Coagulase Negative Staphylococci RT-PCR versus BTSCC ($p = 0.455$).

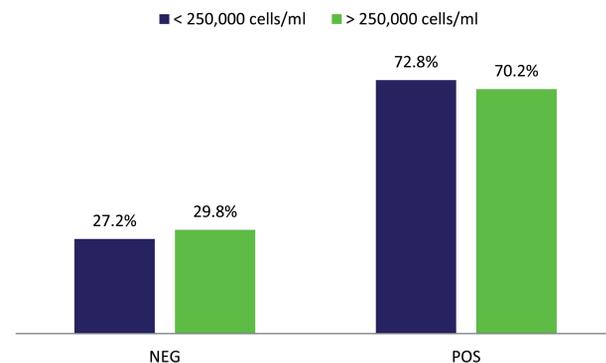


Figure 4. *Escherichia coli* RT-PCR versus BTSCC ($p = 0.049$).

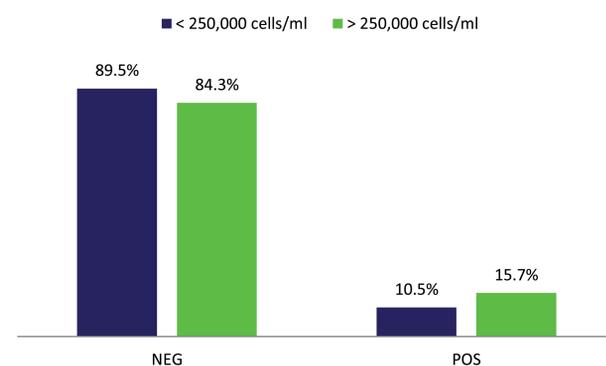
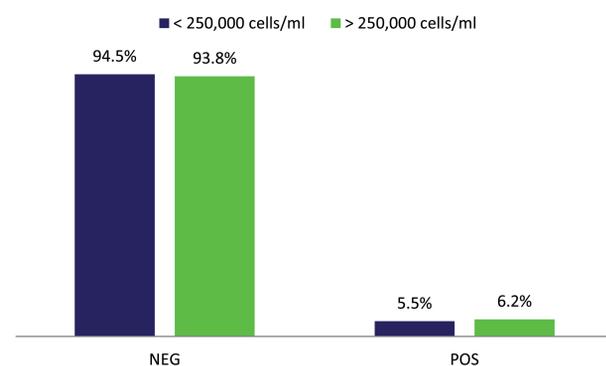


Figure 5. Coliform bacteria RT-PCR versus BTSCC ($p = 0.028$).



DISCUSSION

STARTCHECK® can be used as a complementary tool for bovine mastitis management. BTM samples on FTA® cards may be tested by RT-PCR, allowing report delivery in a very short timeframe. The results presented here indicate that positive RT-PCR samples for *Staphylococcus aureus*, *Escherichia coli* and coliform bacteria are correlated with high BTSCC.

REFERENCES

1. Bennedsgaard, T.W. and Katholm, J. 2011. Real Time PCR values for mastitis pathogens - relations to milk quality and herd characteristics in Danish dairy herds. International Conference on Udder Health and Communication.
2. Valls, L., Lázaro, M., Jubert, A., Guix, R. and Maldonado, J. 2010. A new methodology for detection and quantification of pathogenic bacteria in bovine bulk tank milk. Proc. EAVLD 1st Congress.

STARTCHECK
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