

# FAST AND CONVENIENT NUCLEIC ACID EXTRACTION METHOD FOR MASTITIS DIAGNOSTIC

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## Bovine mastitis diagnosis

Bovine mastitis is the most common and costly disease among dairy cows. It is an inflammation of the mammary gland that is predominantly caused by a bacterial infection.

When mastitis is identified in a cow's quarter(s), it is important to identify the pathogen causing the infection because different categories of pathogens require different management strategies.

Once the infection is identified, a dairy farmer can work with his or her veterinarian to target an effective treatment plan. Prudent use of antibiotics reduces the likelihood of resistant pathogens developing and can reduce the duration of treatment a cow may need, which in turn decreases operating costs.

## INTRODUCTION

In combination with VetMAX™ MastiType multiplex qPCR kits, the Animal Health group at Applied Biosystems™ Thermo Fisher Scientific now offers a new easy-to-use and fast nucleic acid extraction method for mastitis diagnostic.

## MATERIALS AND METHODS

Figure 1. MagMAX CORE Nucleic Acid Purification Kit and Mastitis & Panbacteria Module



**MagMAX™ CORE Nucleic Acid Purification Kit** is an universal magnetic bead-based separation system designed for rapid purification of high-quality DNA and RNA for downstream molecular analysis.

The new **MagMAX™ CORE Mastitis & Panbacteria Module** is offered here in combination with the universal kit to aid in the processing of all bacteria, especially those important for the detection of mastitis in cattle and from fresh, frozen, or preserved milk samples.

Figure 2. Mastitis diagnostic

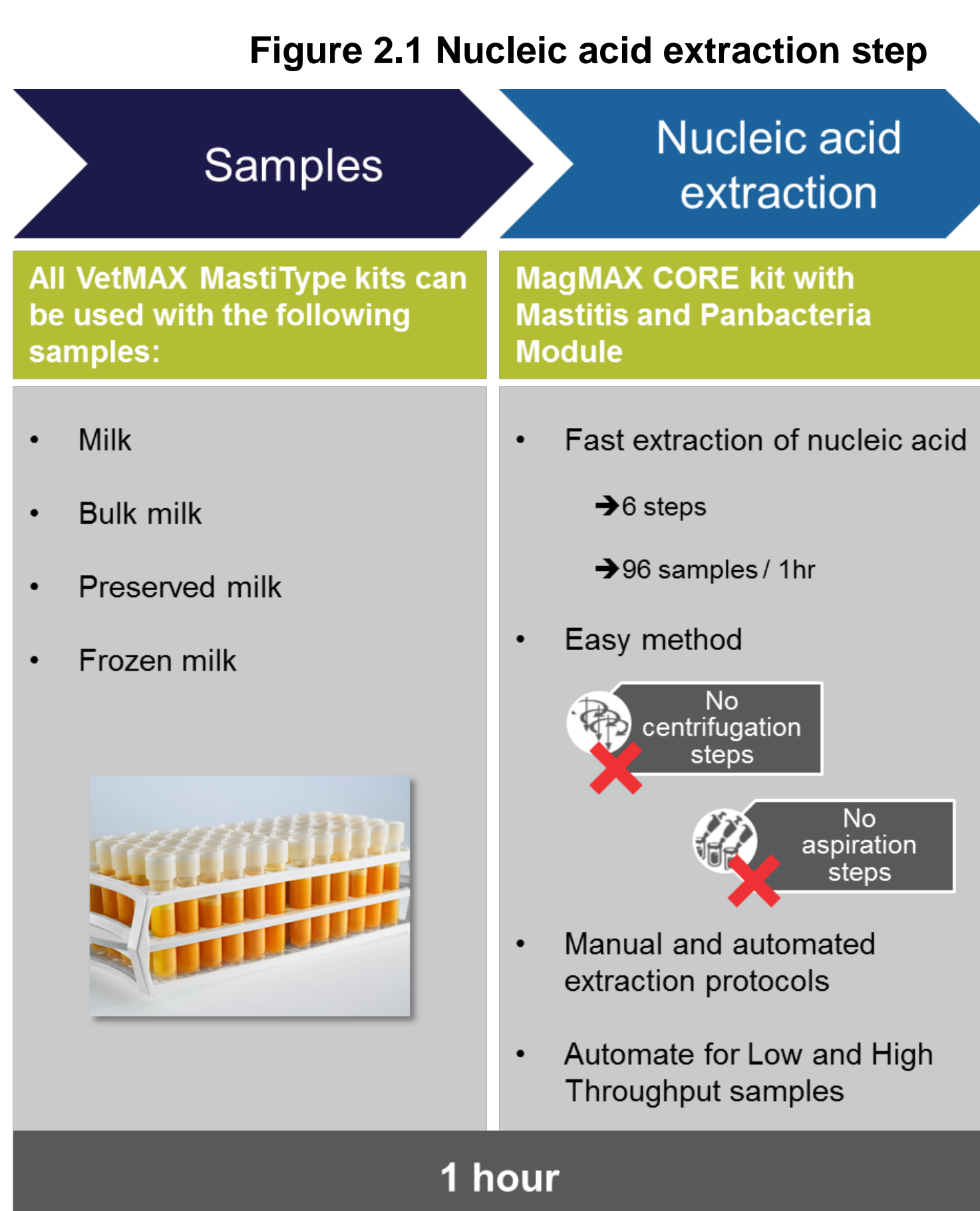
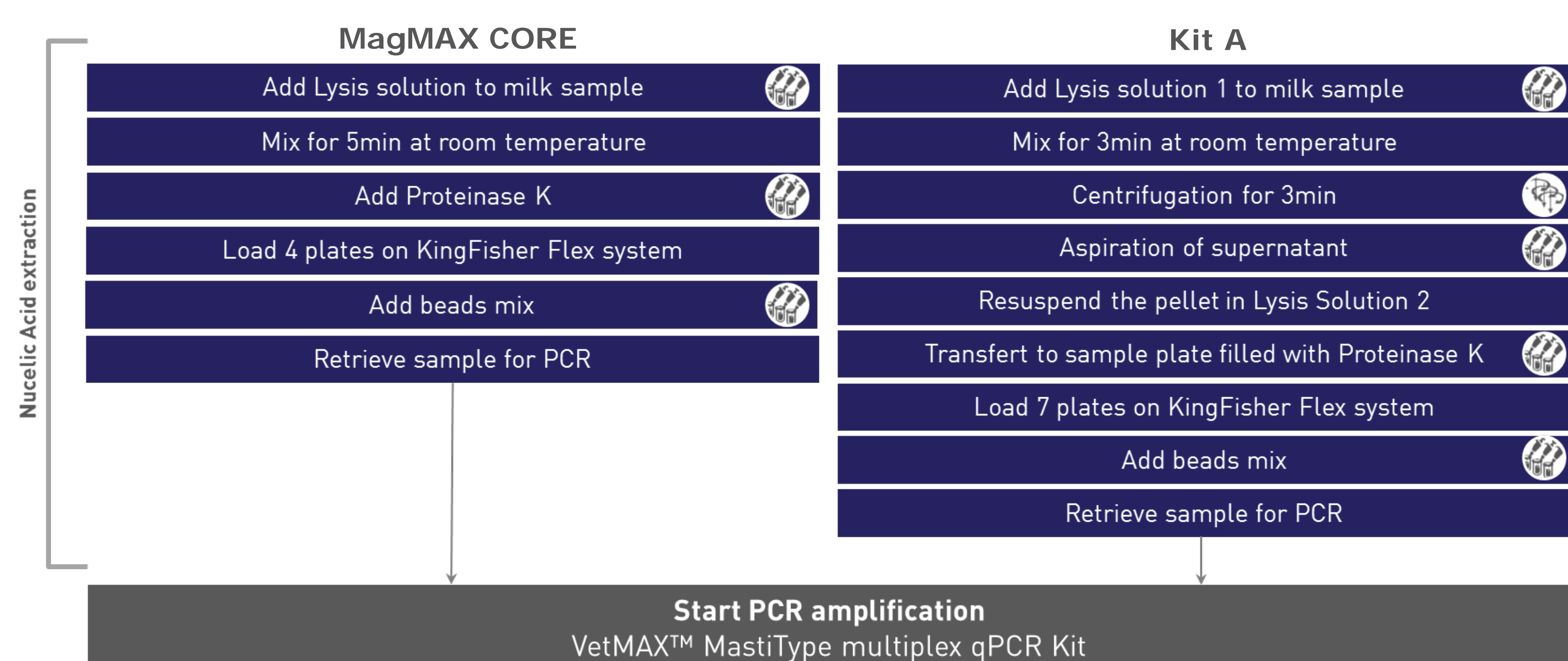


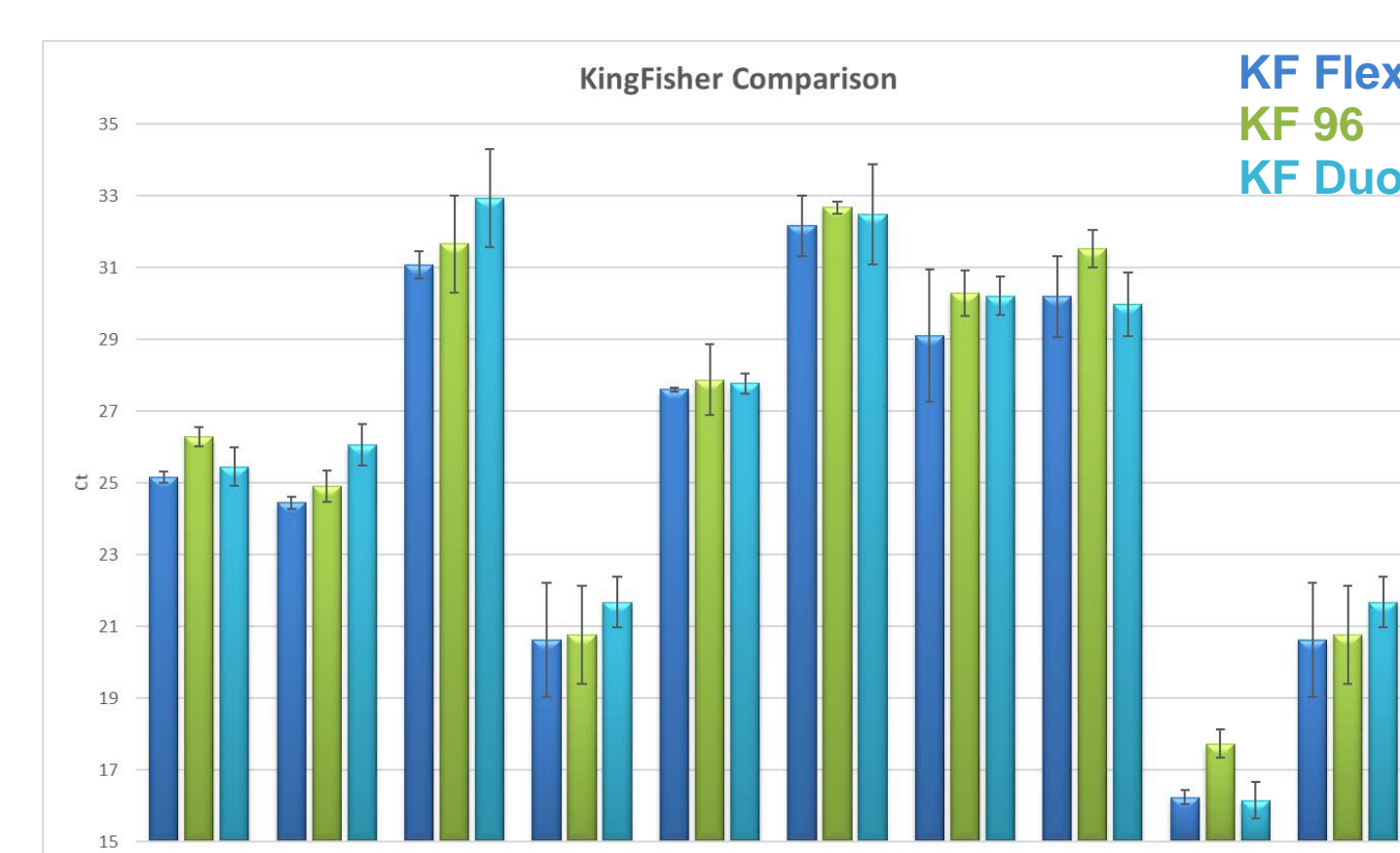
Figure 2.2 New extraction protocol compared to an alternative currently available method



The new protocol offers benefits such as minimal hands-on time and easy-to-use, fast and convenient with automated and manual purification methods.

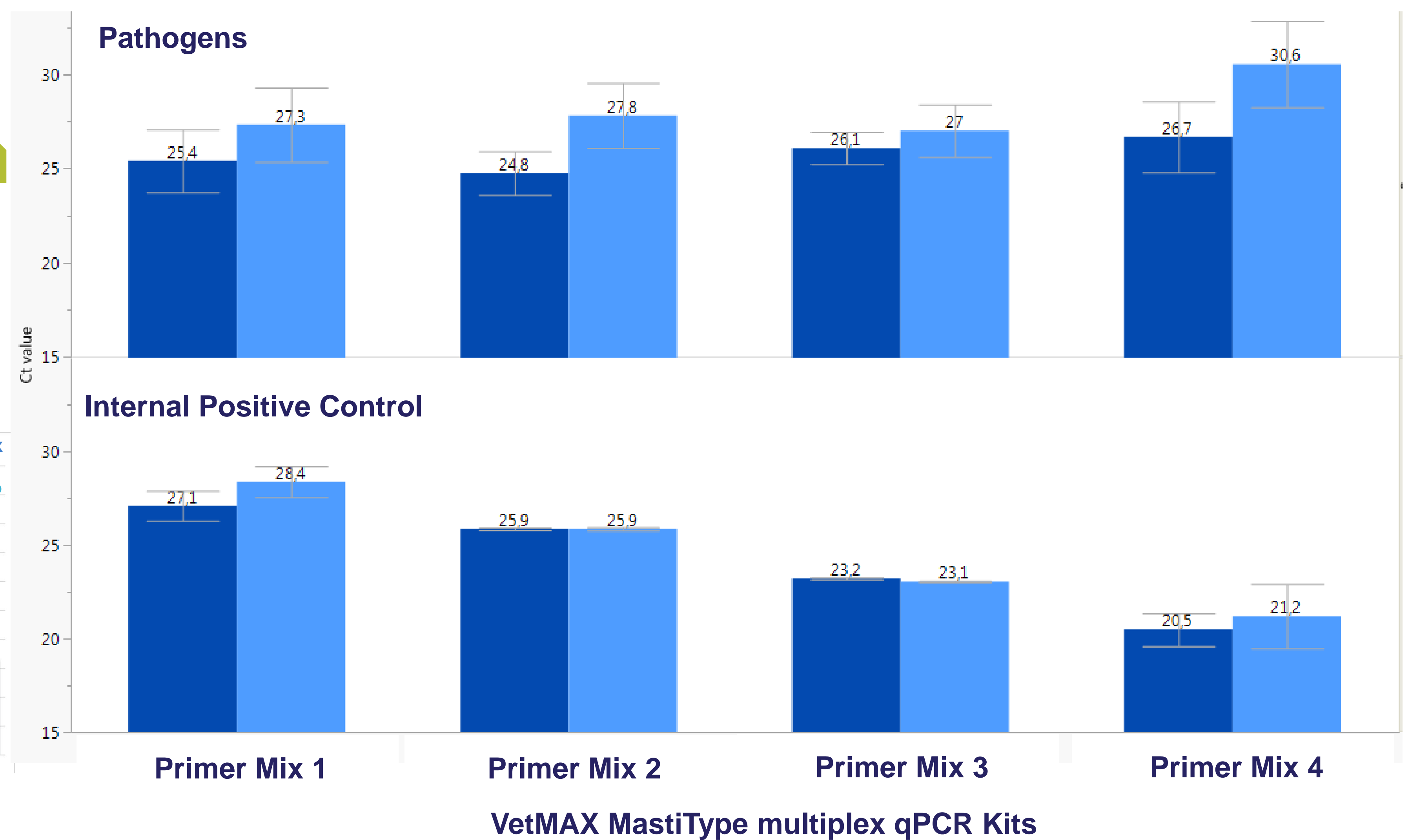
## RESULTS

Figure 3 Instruments validated



No statistical difference has been observed between KingFisher instruments (Student test)

Figure 4 Comparison of MagMAX CORE vs Kit A extraction protocols



Nucleic acid from milk samples coming from North-America and Europe were extracted using this new extraction method and an alternative available method. The extracted DNA were tested with three different 4-plexed VetMAX™ MastiType multiplex qPCR kits allowing a total detection of 19 species.

MagMAX CORE extraction method has been validated on a broad range of mastitic milk field samples containing each of the target organisms, including gram-positive and gram-negative bacteria. It is convenient for low and high throughput application and provides equivalent or better DNA recovery compared to Kit A with minimal extraction and reagent preparation time.

## CONCLUSION

MagMAX CORE extraction method is part of a complete mastitis solution designed to provide rapid and accurate results in order to ensure the efficacy of surveillance and control programs.