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A Comparison of Two Commercially Available PCR Assays for the Detection of *Vibrio* from Seafood Samples

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INTRODUCTION

Bivalve mollusks and crustaceans are natural reservoirs of *Vibrio* species and, if eaten raw or under-cooked, carry the risk of causing foodborne disease.
A reliable detection method is a valuable tool to ensure that seafood is safe to eat.

This study compares the performance of the Thermo Scientific™ SureTect™ Vibrio cholerae, V. parahaemolyticus and V. vulnificus PCR Assay (candidate method) for detection of target strains from mollusks and crustaceans to the Hygiena™ BAX® System Real-Time PCR Assay for *Vibrio.*

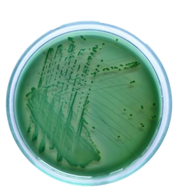
MATERIALS AND METHODS

An unpaired study was conducted testing eighty-eight mollusk and crustacean samples which were artificially contaminated with 2 CFU/25g of either *V. cholerae*, *V. parahaemolyticus* and *V. vulnificus.* Candidate method samples were tested according to the kit workflow (Figure 1) and BAX samples were tested according to the manufacturer's protocol.

Figure 1: Candidate method

Samples incubated in single strength Alkaline Peptone Water for 8 hours at 35ºC.

Samples run on the SureTect PCR Assay* and streak onto TCBS for confirmations



* Samples run on the Applied Biosystems™ QuantStudio™ 5 Food Safety Real-Time PCR System and the Applied Biosystems™ 7500 Fast Food Safety Real-Time PCR System.

RESULTS

Figure 2: Candidate and alternative workflow comparison

Table 1: Method agreement results between the candidate and alternative method

Method agreement	*Vibrio cholerae*	*Vibrio parahaemolyticus*	*Vibrio vulnificus*
Positive agreement	22	27	22
Negative agreement	51	16	45
Positive deviation	9	36	12
Negative deviation	6	9	9

Key:
Positive Agreement = Candidate Method Positive, Alternative Method Positive
Negative Agreement = Candidate Method Negative, Alternative Method Negative
Positive Deviation = Candidate Method Positive, Alternative Method Negative
Negative Deviation = Candidate Method Negative, Alternative Method Positive

The results show that the candidate method had superior performance when detecting the different *Vibrio* targets compared to the alternative method, achieving a total of 57 positive deviations on both the QuantStudio 5 and the 7500 Fast (Table 1). The candidate method achieved a time to result of less than 10 hours, compared to 20-22 hours for the BAX method (Figure 2).

CONCLUSIONS

Faster Time to Result

The SureTect workflow delivered more accurate results in a shorter timeframe
SureTect workflow: <10 hours
BAX workflow: 20-22 hours

Improved Sensitivity

Improved performance in detection of *V. cholerae*, *V. parahaemolyitucs* and *V. vulnificus* from mollusks and crustaceans compared to the BAX PCR Assay.

Simpler workflow

With single enrichment, pre-filled lysis reagents and simple lysis the SureTect workflow delivers more accurate results with a simpler workflow compared to the BAX workflow.

TRADEMARKS/LICENSING

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