thermoscientific

Detection of *Vibrio* from Seafood using the new SureTect Vibrio Multiplex PCR Assay

David Crabtree, Annette Hughes, Dean Leak, Patrick Stephenson and Will Gibbs. Thermo Fisher Scientific Wade Road, Basingstoke, Hampshire, United Kingdom, RG24 8PW

INTRODUCTION

The new Thermo Scientific™ SureTect™ Vibrio cholerae, V. parahaemolyticus and V. vulnificus PCR Assay has been developed to simultaneously detect and differentiate *Vibrio cholerae* , *Vibrio parahaemolyticus*, and *Vibrio vulnificus* from molluscs and crustaceans.

This study evaluated a rapid time to result for the detection of *V. parahaemolyticus* and *V. vulnificus* from molluscs and crustaceans using the SureTect Vibrio PCR Assay and comparing performance to the ISO 21872-2 method.

Figure 1: Instrumentation for use with the SureTect range

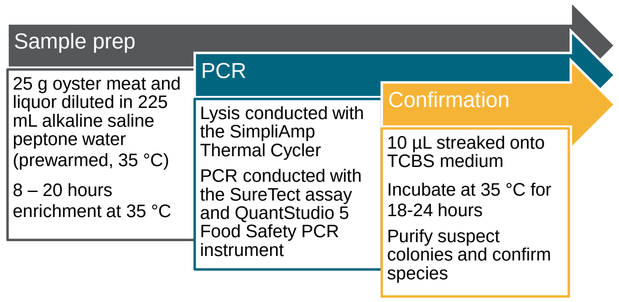
Left-to-right, Applied Biosystems™ SimpliAmp™ Thermal Cycler for sample prep, Applied Biosystems™ QuantStudio™ 5 Food Safety PCR System, laptop with Thermo Scientific™ Analysis Software and SureTect Kits.

MATERIALS AND METHODS

The study was conducted by testing naturally and artificially contaminated seafood, including molluscs and crustaceans, for both the candidate (Figure 2) and ISO reference methods. Artificial contamination with *V. cholerae*, *V. parahaemolyticus* and *V. vulnificus* was conducted at a level 1-5 CFU/25 g.

Reference method samples were tested according to ISO21872-2 methodology and compared to the SureTect *Vibrio* PCR method (unpaired study).

Figure 2: Process flow for the SureTect *Vibrio* PCR Assay



RESULTS

The ISO method routinely failed to isolate *Vibrio* species on TCBS medium due to overgrowth of competing microflora including closely related organisms such as *Vibrio alginolyticus*. To compare the performance of the SureTect Vibrio PCR solution to the ISO reference method, the SureTect Vibrio PCR Assay was used to test ISO reference method enriched samples and the two sets of PCR data were compared (Figure 4). The SureTect Vibrio PCR method demonstrated superior performance to the ISO reference method with 63 positive deviations versus six negative deviations.

Unpaired Study Key

Positive Agreement:
SureTect Method Positive, Reference Method Positive

Negative Agreement:
SureTect Method Negative, Reference Method Negative

Positive Deviation:
SureTect Method Positive, Reference Method Negative

Negative Deviation:
SureTect Method Negative, Reference Method Positive

Figure 3: Example amplification plot from the Thermo Scientific Analysis Software

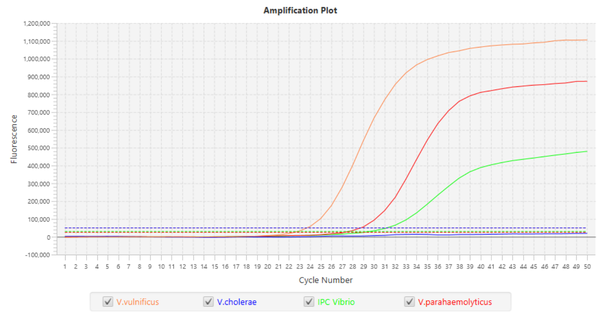
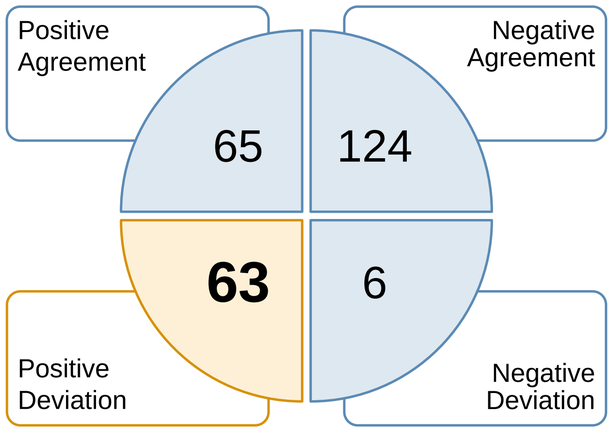


Figure 4: PCR results agreement between the SureTect method and ISO reference method



CONCLUSIONS

Rapid Time to Result

- The SureTect Vibrio PCR method utilises an eight hour enrichment.
- Total time to result for the SureTect Vibrio PCR method is 10 hours compared to the ISO method of 40 hours.

Improved Sensitivity

- The SureTect Vibrio PCR method demonstrated superior specificity to the ISO 21872-2 method.
- Coinfection is easily identified compared to the ISO reference method which prevents under-reporting.

Ease of Use

- The RapidFinder Analysis Software enables simple interpretation of results (Figure 3).

TRADEMARKS/LICENSING

LT2530A March 2020

ThermoFisher SCIENTIFIC