thermo scientific

Inclusivity and Exclusivity of Two PCR Assays for the Detection of *Vibrio* species

Annette Hughes[1], David Crabtree[1], Laura Vaahtoranta[2], Hanna Lehmusto[2], Matthew Hahs[3]. Thermo Fisher Scientific, [1]Basingstoke, UK, [2]Vantaa, Finland, [3]Lenexa, USA.

INTRODUCTION

The majority of foodborne illnesses linked to *Vibrio* spp. are caused by *Vibrio cholerae*, *Vibrio parahaemolyticus* and *Vibrio vulnificus*. Rapid detection of these strains is key to lower the risk of outbreaks.

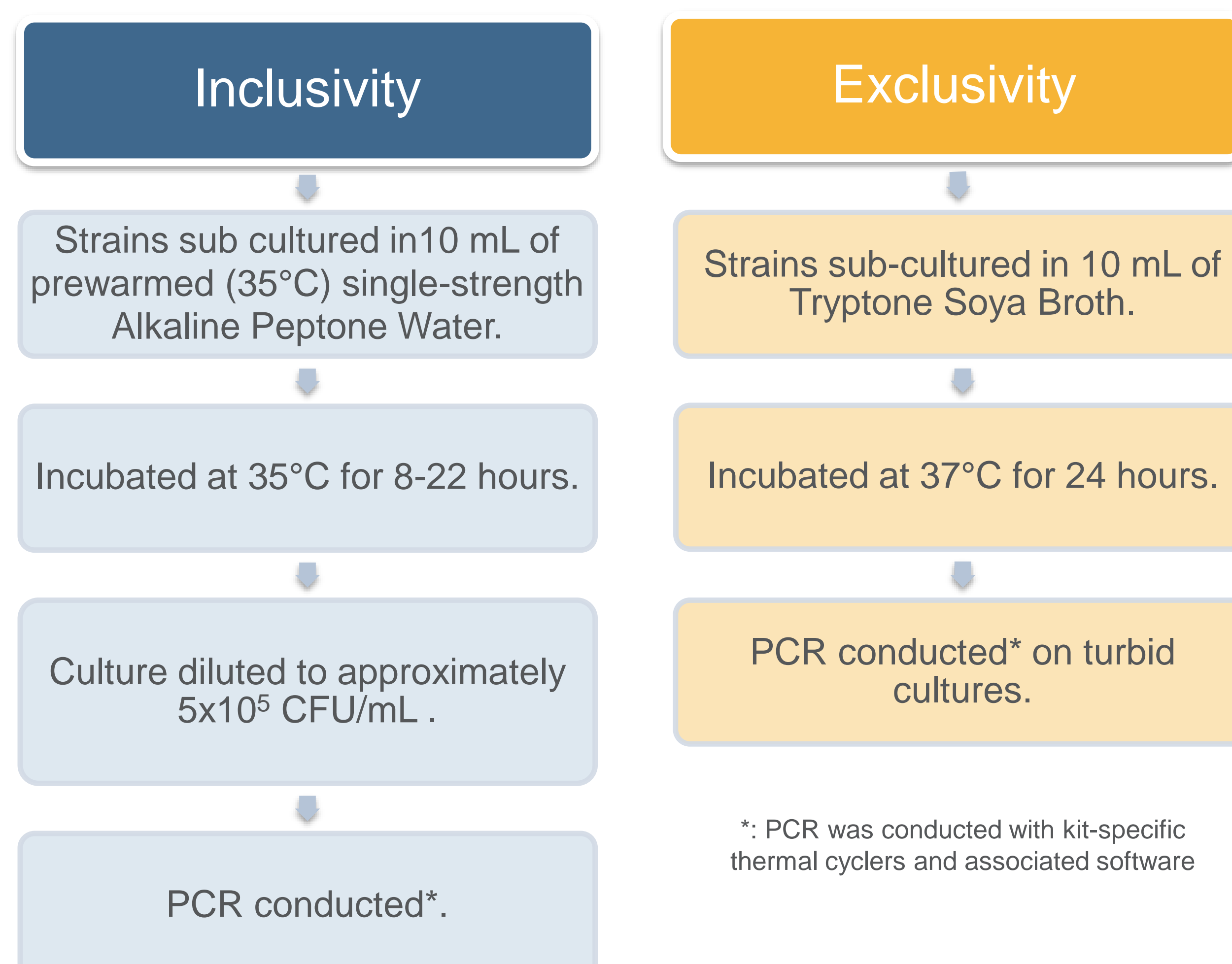
Reference methods using traditional plating media do not effectively differentiate pathogenic *Vibrio* from other flora. A PCR Assay that detects and differentiates key species would benefit food producers with improved time to result and accuracy of reporting.

This study compared the performance of the Thermo Scientific™ SureTect™ PCR Assay (candidate method) to the Hygiena™ BAX® System Real-Time PCR Assay for *Vibrio* (alternative method) at differentiating *V. cholerae*, *V. parahaemolyticus* and *V. vulnificus* from non-target species.

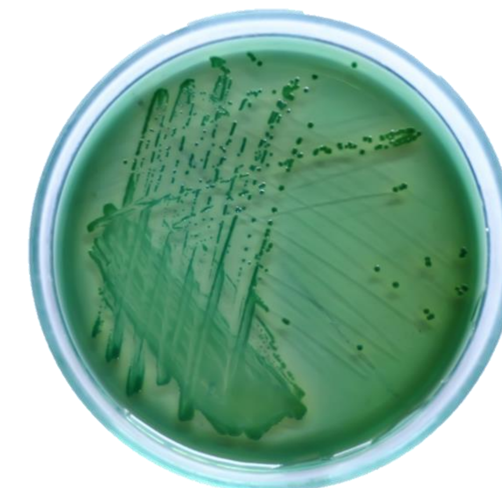
MATERIALS AND METHODS

Seventy-two *Vibrio* isolates and 48 non-target isolates were tested, according to Figure 1.

Figure 1: Process flow for Inclusivity and Exclusivity of the candidate method



PANEL SELECTION



Inclusivity

43 *V. parahaemolyticus*
20 *V. vulnificus*
9 *V. cholerae*

Geographically Diverse

Origins included: India, United Kingdom, Sweden, Japan, and Thailand.

Source Matrix

Isolates obtained from Pacific oysters, water, blue mussels, and frozen prawns.

Exclusivity

48 non-targets, including closely-related *Vibrio* species such as *V. alginolyticus* and *V. albensis*.

RESULTS

Figure 2: Inclusivity and Exclusivity of the Candidate and Alternative Methods

The candidate method demonstrated superior inclusivity performance compared to the alternative method, achieving 100% inclusivity compared to 78% (Figure 2). The alternative method generated six false negative results for *V. parahaemolyticus* and one false negative for *V. cholerae*.

One false negative result for the *V. parahaemolyticus* target of the alternative method was further incorrectly detected positive as *V. cholerae*. This isolate was correctly identified by the candidate method.

Both PCR assays correctly excluded all 48 non-target isolates.

CONCLUSIONS

TRADEMARKS/LICENSING

© 2020 Thermo Fisher Scientific Inc. All rights reserved. All trademarks are the property of Thermo Fisher Scientific and its subsidiaries unless otherwise specified. BAX® is the property of Hygiena International Ltd. This information is not intended to encourage use of these products in any manner that might infringe the intellectual property rights of others.

LT2587A
October 2020

ThermoFisher SCIENTIFIC