

Method modification of the *Listeria* PreciS enumeration methods in accordance with ISO 16140-2:2016

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Introduction

Listeria monocytogenes is a major global foodborne pathogens with a severe impact on public health¹. The ISO 16140-2:2016² validated Thermo Scientific™ *Listeria* PreciS™ enumeration methods have been extended to offer a simpler workflow with flexibility for the enumeration of *Listeria* species and *L. monocytogenes*.

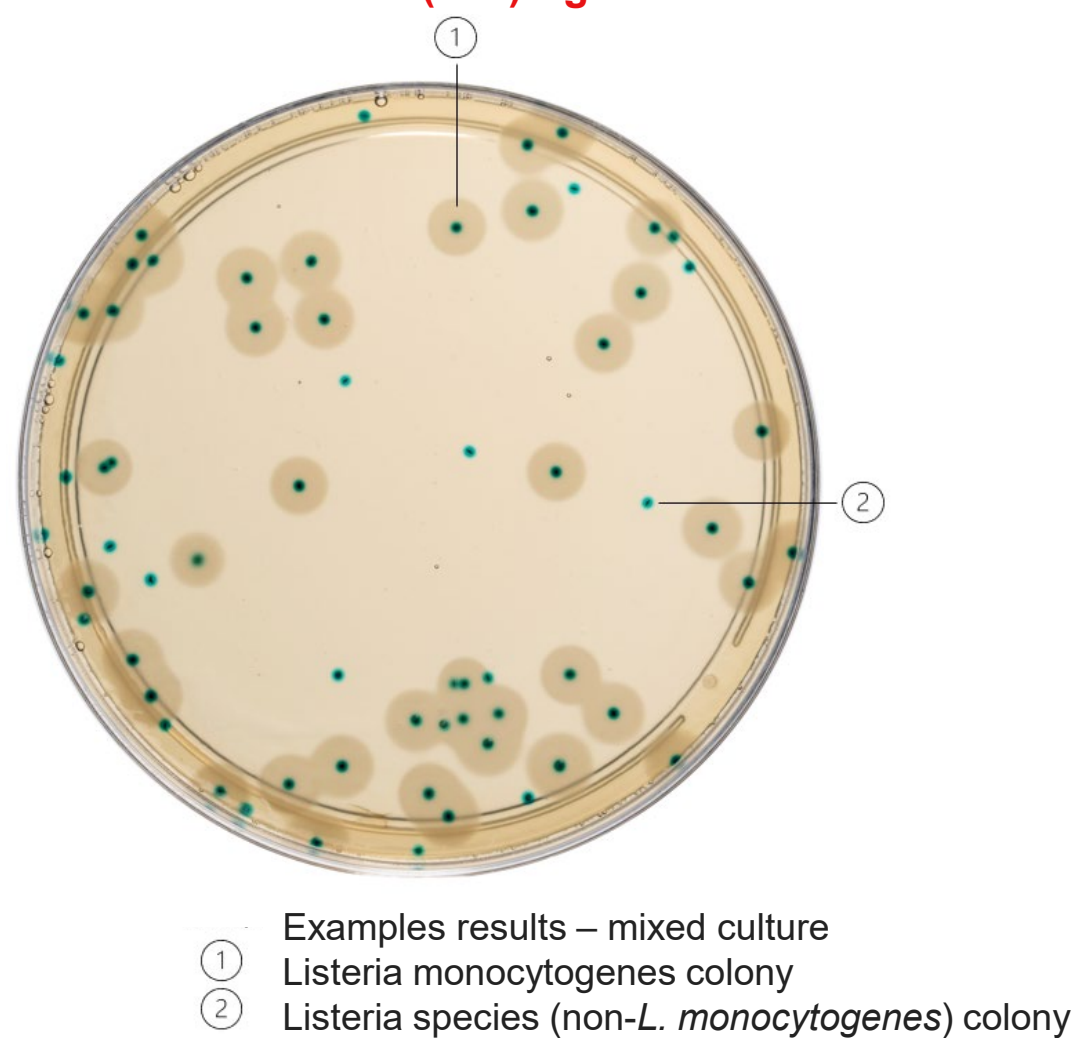
Study objectives:

- Validate the PreciS method with Thermo Scientific™ Oxoid™ 24 *Listeria* Enrichment Broth (24 LEB) as a diluent.
- Introduce the **new** and **enhanced** Thermo Scientific™ Oxoid™ *Brilliance*™ *Listeria* Agar (ISO).
- Offer a **pour plate protocol** option which reduces the number of surface plates required.
- Offer a wider range of **confirmation tests**, including the rapid Thermo Scientific™ PreciSCheck™ *Listeria* species and Thermo Scientific™ PreciSCheck™ *L. monocytogenes* lateral flow tests.

Methods

The method modifications were validated against the ISO 11290-2:2017³ reference method in an unpaired study design. The methods consisted of a dilution in buffered 24 LEB (without selective supplement) as well as the diluents prescribed ISO 6887 series and ISO 11290-2 standard, followed by plating procedures on the new *Brilliance* *Listeria* Agar (ISO) (Figure 1), including both surface and pour plating. Presumptive *Listeria* colonies were confirmed using a range of different confirmation tests, including the PreciSCheck lateral flow test that give results in 20 minutes or less.

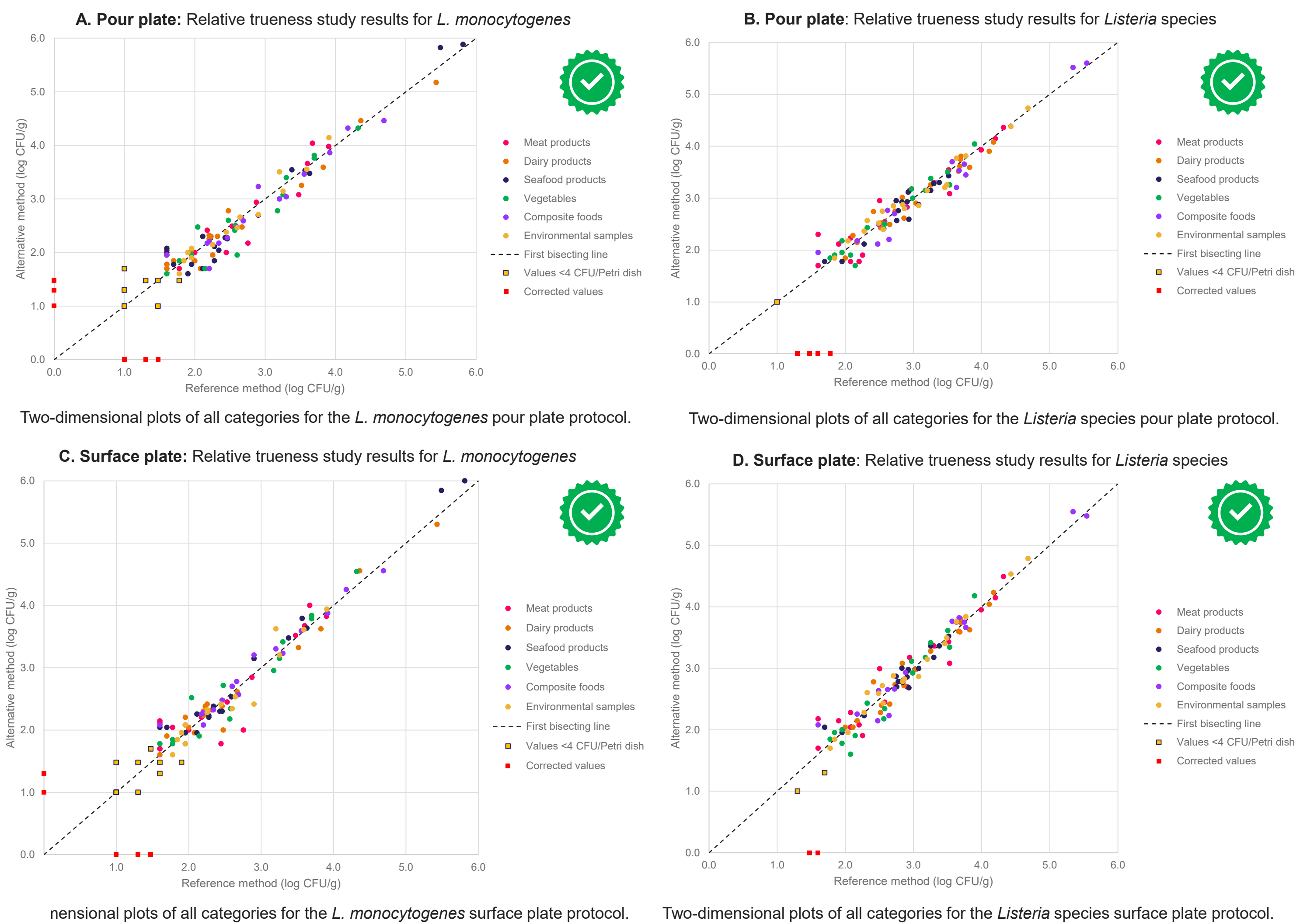
Figure 1. *Brilliance* *Listeria* (ISO) Agar



Results

The average difference in the relative trueness studies for *L. monocytogenes* were -0.02 log cfu/g with the pour plate protocol and 0.02 log cfu/g with the surface plate protocol. For *Listeria* species, the average difference was -0.03 log cfu/g with the pour plate protocol and 0.00 log cfu/g with the surface plate protocol. The relative trueness study results can be seen in Figure 2. These results suggest a satisfactory performance of the methods against the reference method. This was further demonstrated by the accuracy profile study results.

Figure 2. Summary of ISO 16140-2:2016 Results for the *Listeria* PreciS Enumeration methods



Conclusions

The two *Listeria* PreciS enumeration methods for *Listeria* species and *L. monocytogenes* provide a simple, fast, accurate and reliable culture-based method for the enumeration of *Listeria* from a broad range of foods and environmental surfaces. The method modifications provide additional flexibility and enhanced options for the end user.

- Diluent flexibility** • Use 24 LEB or an ISO diluent
- Pour plate** • Reduce labour and media requirements
- 20 minutes** • Confirmation

References

- Centers for Disease Control and Prevention, *Listeria* <https://www.cdc.gov/Listeria/index.html>.
- ISO 16140-2:2016: Microbiology of the food chain — Method validation — Part 2: Protocol for the validation of alternative (proprietary) methods against a reference method
- ISO 11290-2:2017 - Microbiology of the food chain — Horizontal method for the detection and enumeration of *Listeria monocytogenes* and of *Listeria* spp. — Part 2: Enumeration method

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