Detection of *Salmonella* in Raw and Ready-to-Cook Meat and Poultry Products and Environmental Samples Using an ISO-Validated Multiplex PCR Kit: the foodproof® *Salmonella* Genus plus Enteritidis & Typhimurium Detection LyoKit

Identification of the most relevant serovars for human and animal health, *Salmonella* Enteritidis and *Salmonella* Typhimurium, is critical when managing the food production chain from farm-to-fork to reduce consumer risk. Global regulations concerning these serovars require test methods to be robust in sensitivity and specificity to ensure reliable and accurate results.

Validation Methods

- The study comprised 75 *Salmonella* spp., 25 *Salmonella* Enteritidis and 25 *Salmonella* Typhimurium inclusivity strains, 30 exclusivity non-target strains, sensitivity, relative level of detection (RLOD) and collaborative studies.
- Validation of the alternative method was performed and compared to the ISO reference method (culture) for:
  - Raw Meat and Poultry (25 g)
  - Ready-to-Cook Meat and Poultry (25 g)
  - Environmental Samples
- Samples were enriched in:
  - Buffered Peptone Water (1:10) at 37 ± 1 °C for 16 – 20 h
- Following incubation, DNA extraction was performed with foodproof® StarPrep® Three Kit (Standard or 8-strip), then lysates were analyzed by real-time PCR with the foodproof *Salmonella* Genus plus Enteritidis & Typhimurium Detection LyoKit.

Standard Extraction Option

High-Throughput 8-Strip Extraction Option

Validation Results

- The validation study (NordVal No. 055) indicated that the foodproof method performs comparably to reference methods EN ISO 6579-1:2017 and 6579-3:2014 and fulfills the validation criteria according to EN ISO 16140-2:2016.
- The specificity studies yielded:
  - 100% inclusivity of all target strains
  - 100% exclusivity of all non-target strains
- Additionally, the acceptability limits for the sensitivity and RLOD studies for all categories and enrichment protocols were met.

Industry Significance

- The validation of this foodproof multiplex, real-time PCR assay provides many industries with a rapid and reliable method for the detection of *Salmonella* spp., *Salmonella* Enteritidis and *Salmonella* Typhimurium in raw and ready-to-cook meat and poultry products and environmental samples.
- The foodproof assays have a wide range of extraction options and compatible instruments, including the BAX® Q7 System and the Roche LightCycler® 480 II.
- Using a single assay to not only screen for *Salmonella* but also identify regulated strains with the same enrichment, lysate, and assay reduces costs and improves operational efficiencies throughout food production and environmental monitoring, as well as for high-throughput testing laboratories.

Products

Product No.	Description	Quantity
Enrichment Options		
MED2010	Buffered Peptone Water	2.5 kg
MED2011		500 g
DNA Extraction Options		
KIT230187	foodproof® StarPrep® Three Kit, Standard	96 reactions
KIT230188	foodproof® StarPrep® Three Kit, 8-Strip	480 reactions
PCR Test Options		
KIT230134 (LP) KIT230135 (RP) KIT230136 (DP)	foodproof® *Salmonella* Genus plus Enteritidis & Typhimurium Detection LyoKit	96 reactions
Real-Time PCR Instrument Options		
Multiple packages*	BAX® Q7 System	1 system

* Contact us at www.hygiena.com/contact