



Ready-to-run microchips for identification of food & feed safety pathogens

The microbiological safety of food & feed has become an important concern of consumers, industry, and regulatory agencies since high-risk pathogens for humans and animals get transmitted through food and feed. Culture-based methods have been the industry standard for detecting food and feed safety pathogens. Such methods require a qualified specialist to differentiate microorganisms and it takes a long time to produce results.

Molecular detection methods allow accurate, sensitive and specific detection of food and feed safety pathogens by detecting their genetic signatures using real-time PCR method. Industry regulators have validated the molecular detection methods against culture-based and serological methods.

The ready-to-run microchips with lyophilized reagents developed by Lumex Instruments for use with qPCR analyzer AriaDNA offer simple, rapid and specific determination of eleven pathogens in food and feed products (#007RY80). To enhance the reliability of the detection, a set of positive and negative controls for each target is included in the microchip. Internal control (IC) assay is used to monitor internal inhibition for each sample.



FEATURES AND ADVANTAGES

Microchip-based PCR technique:

- Increases reliability of detection and minimizes operator errors during simultaneous detection of pathogens
 - Ready-to-run microchips with panels of test pathogens
 - Internal control assays for each sample
 - Positive and negative template controls on a microchip
- Simplifies qPCR reaction set up for the panels of pathogens
 - All reagents are pre-dispensed and dried in microchip wells
 - Only the addition of a DNA sample to the microchip is needed
- Shortens qPCR analysis time to result
 - PCR run is completed in 38 min due to fast temperature transitions
- Simplifies shipment & storage of the microchip kits
 - Shelf-life of lyophilized PCR reagents on microchip is up to 6 months

USER FRIENDLY SOFTWARE

AriaDNA software is designed to acquire real-time PCR data and allows simplified operation steps. It offers auto-interpretation of results, allows manual analysis of data, and prints a report in compliance with 21 CFR part 11 requirements.

MICROCHIP LAYOUT

1 Sample 1	2 Sample 2	3 Sample 3	4 Sample 4	5 Sample 5	6 Sample 6	7 C-	8 C+
SE VP	SE VP	SE VP	SE VP	SE EC-VP	SE VP	SE VP	BC IC
CJ YE	CJ YE	CJ YE	CJ YE	CJ YE	CJ YE	CJ YE	LM SA
EC BR	EC BR	EC BR	EC BR	EC BR	EC BR	EC BR	SH VC
SH VC	SH VC	SH VC	SH VC	SH VC	SH VC	SH VC	EC BR
LM SA	LM SA	LM SA	LM SA	LM SA	LM SA	LM SA	CJ YE
BC IC	BC IC	BC IC	BC IC	BC IC	BC IC	BC IC	SE VP

Test Panel & Fluorescence Detection*

SE (*Salmonella enterica*)
 VP (*Vibrio parahaemolyticus*)
 CJ (*Campylobacter jejuni*)
 YE (*Yersinia enterocolitica*)
 EC (*E. coli* O157:H7)
 BR (*Brucella* spp.)
 SH (*Shigella* spp.)
 VC (*Vibrio cholerae*)
 LM (*Listeria monocytogenes*)
 SA (*Staphylococcus aureus*)
 BC (*Bacillus cereus*)
 IC (Internal control)

Controls:

C- (Negative control)
 C+ (Positive control)

Number of samples: 6

*In each well, the target on the right and left sides is detected on Channel 1 and 2, respectively.

ANALYSIS WORK-FLOW

1. Enrich sample: Enrichment encourages live targeted pathogens in a sample to multiply and reach a population number high enough to be detected accurately, reliably and reproducibly. Enrich all samples in 24-48h following recommended enrichment protocols for each pathogen.
2. DNA extraction step: Enriched sample is treated to extract DNA using commercial DNA extraction and purification kit.
3. Real-time PCR amplification step:
 - a. Microchip loading: Add extracted DNA into the ready-to-use microchip that contains lyophilized reagents.
 - b. Pre-set PCR program: Insert the microchip into the AriaDNA analyzer and run the analysis with a pre-set protocol on a computer.
4. Print report step: Obtain real-time PCR auto-interpreted results in 38 minutes. The report can be printed.

RESULTS OF PATHOGEN DETECTION

1. Real-time PCR data for 6 samples is obtained for a full panel of 11 pathogens.
2. Results of 12 assays for pathogenic microorganisms and internal control targets are interpreted by AriaDNA software to obtain qualitative results for microbial contaminants in each sample.

Disclaimer:

For research use only (RUO). Information in this document is subject to change without notice. This kit is designed for in vitro qualitative detection of test target genomes with a broad detection profile. Specifically, the primers represent published homology with NCBI database reference sequences available at the time of design. We reserve the right to change, alter, or modify any product to enhance its performance and design, including the revision of assay sequences. Presumptive positive samples should be confirmed as per the laboratory standard operating procedures or by following the appropriate reference method confirmation, beginning with primary enrichment, selective media, and confirmation of isolates using appropriate biochemical and serological methods. The purchase of this product includes a non-transferable right for using only this quantity of product for the purchaser's own internal research. The microchip is a single-use device.

