



Ready-to-run microchips for detection & identification of avian pathogens using real-time PCR analyzer AriaDNA

Viral pathogens cause devastating economic losses in the poultry industry thriving worldwide. This growth of poultry can also facilitate the enhanced transmission of infectious viral pathogens among other birds, and humans. Therefore, an early, accurate, and rapid diagnosis of infectious viral disease in poultry has paramount importance for reducing economic losses and decreasing the risk of zoonotic disease emergence in humans. The management of viral diseases would have a direct impact on improving the health and welfare of poultry, and poultry farmers.

The ready-to-run microchips with lyophilized reagents developed & optimized by Lumex Instruments for real-time PCR analyzer AriaDNA offer simple, rapid and accurate determination of pathogens, matching cost-effectiveness and throughput requirements of the industry. The microchips just need addition of the test sample RNA into the individual reactors of the microchip thus significantly minimizing human error. To impart high reliability into the detection & identification, a set of positive and negative controls for each pathogen of the test kit panel, and internal control (IC) to monitor internal inhibition of the sample are included in the microchips.



ADVANTAGES

- Microchip qPCR with 10 times lower reagent consumption
- Increased specificity for difficult templates thanks to uniform temperature in microchip wells
- Ready-to-run microchips with panels of the test pathogens minimizes operator errors
- Simplifies master mix preparation for the panels of pathogens - needs just addition of RNA sample mixed with Reverse Transcriptase into the microchip
- Fast temperature transitions complete qPCR run in less than 45 min and shorten qPCR analysis time to result
- Simple shipment & storage of the microchip kits thanks to stabilized lyophilized reagents
- Customizable panels of pathogens in the ready-to-run microchip



USER FRIENDLY SOFTWARE

Designed to acquire real-time PCR data and allows simplified operation steps. It offers auto-interpretation of results in view of IC, also allows manual analysis of data, and prints three layers of report in compliance with 21 CFR part 11 of the regulations.

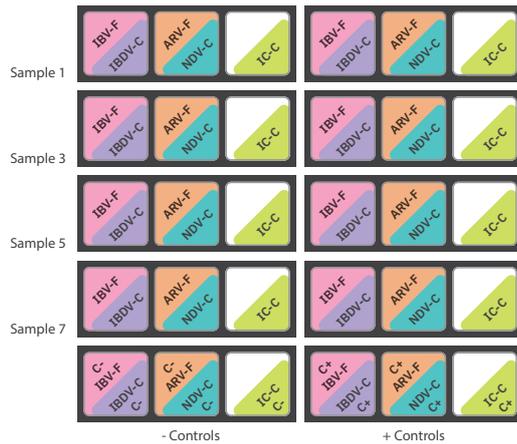
FLUORESCENCE DETECTION

AriaDNA 2 is two-channel analyser: 1. FAM/SYBR Green, and 2. ROX/CY5

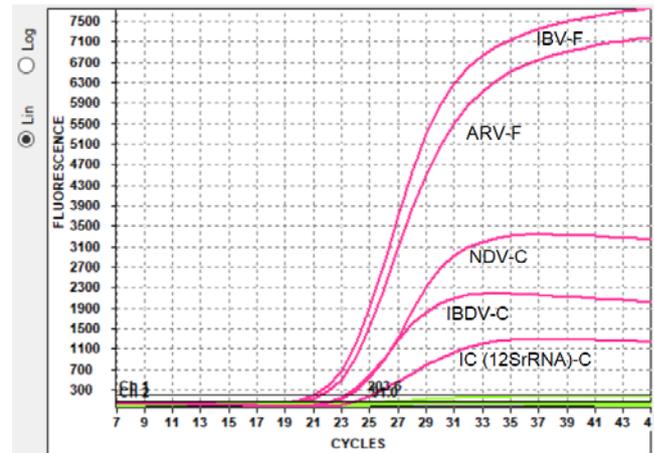
Channel 1 (FAM) 1. IBV (Avian Infectious Bronchitis Virus), 2. ARV (Avian Orthoreovirus)

Channel 2 (Cy5) 1. IBDV (Infectious Bursal Disease Virus), 2. NDV (Newcastle Disease Virus), IC (Internal control)

Test panel of pathogens



Amplification plots



IBV (Avian Infectious Bronchitis Virus), IBDV (Infectious Bursal Disease Virus), ARV (Avian Orthoreovirus), NDV (Newcastle Disease Virus), C+ (Positive control samples); C- (Negative control samples); IC (Internal control).

1. IBV (Avian Infectious Bronchitis Virus)
2. IBDV (Infectious Bursal Disease Virus)
3. ARV (Avian Orthoreovirus)
4. NDV (Newcastle Disease Virus)
5. IC (Internal control)

ANALYSIS FLOW CHART

- 1 Extract RNA from the test samples using suitable RNA extraction and purification kit
- 2 Add extracted RNA samples mixed with Reverse Transcriptase into the microchip reactors
- 3 Insert the microchip into the AriaDNA analyzer and run the analysis with the software on a computer
- 4 Obtain real-time PCR results and print report in 45 minutes

RESULTS

- 1 Real-time PCR data for up to 8 samples with a panel of 4 pathogens
- 2 Detection limit equals 1×10^3 PFU in 1 mL of the sample

For research use only (RUO).



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