



Ready-to-run microchip kit for detection & identification of fish pathogens using real-time PCR analyzer AriaDNA

The aquaculture and fish industry are facing universal threat from the diseases caused by viruses, bacteria, fungi, and protozoa. It is also realized from the international experience of fish farming that aquaculture intensification is associated with the emergence of various viral diseases at the breeding sites leading to enormous economic losses. Such diseases are posing risk not only for aquaculture but also for wild fish populations. The lack of rapid, accurate, cost effective, and reliable means of fish pathogens detection & identification has been one of the limitations in fish pathogen disease management.

To improve the desired sensitivity, specificity and rapidity of the detection process, the real-time PCR has started playing its role. Moreover, Lumex Instruments ready-to-run microchip kits running on real-time PCR AriaDNA analyzer are designed for rapid, cost-effective, qualitative & quantitative detection of a panel of viral pathogens of fish. This technology has ability to run pathogen testing both in the laboratory and on fish farms. In addition, for reliable results, a set of positive & negative controls for each of the pathogen, internal control (IC) as an internal inhibition monitor that is amplified in parallel with the target RNA are also included in the microchip.



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 on complexity of master mix preparations 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.

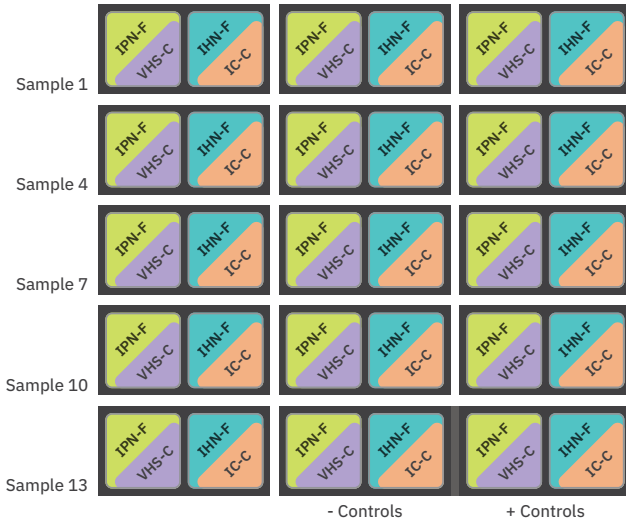
FLUORESCENCE DETECTION

AriaDNA 2 is two-channel analyzer:

Channel 1 (FAM) 1. IPN (*Infectious Pancreatic Necrosis Virus*), 2. IHN (*Infectious Haematopoietic Necrosis*)

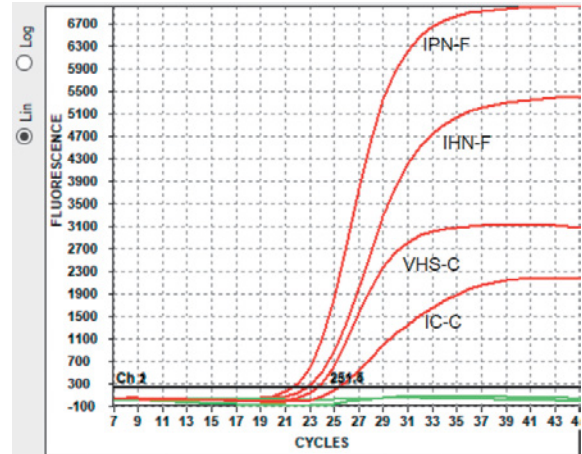
Channel 2 (Cy5) 1. VHS (*Viral Hemorrhagic Septicemia*), 2. IC (*Internal Control*)

Test panel of pathogens



IPN (*Infectious Pancreatic Necrosis Virus*), VHS (*Viral Hemorrhagic Septicemia*), IHN (*Infectious Haematopoietic Necrosis*), and IC (*Internal Control*), C+ (*Positive control sample*); C- (*Negative control sample*).

Amplification plots



1. IPN (*Infectious Pancreatic Necrosis Virus*)
2. VHS (*Viral Hemorrhagic Septicemia*)
3. IHN (*Infectious Haematopoietic Necrosis*)
4. 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 and 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 RT-qPCR results and print report in 45 minutes

RESULTS

- 1 Real-time PCR data for up to 13 samples with full a panel of 4-3 pathogens
- 2 Detection limit equals 1×10^3 PFU in 1 mL of the sample

For research use only (RUO).



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www.lumexinstruments.com
sales@lumexinstruments.com