

Avian Infectious Bronchitis Virus (AIBV) Nucleic Acid Detection Kit (Fluorescent PCR Method)

Product Number: DTK022

Shipping and Storage

1. $-20^{\circ}\text{C}\pm 5^{\circ}\text{C}$, stored in the dark, transported, and subjected to repeated freeze-thaw cycles no more than 5 times, with a validity period of 12 months.
2. The collected or processed samples should be stored at $2^{\circ}\text{C}\sim 8^{\circ}\text{C}$ for no more than 24 hours; If long-term storage is required, it should be stored at -70°C or below, with no more than 3 freeze-thaw cycles.

Component

Component	25T	50T
AIBV reaction solution	500 $\mu\text{L}\times 2$	500 $\mu\text{L}\times 2$
Enzyme solution	25 μL	50 μL
AIBV positive quality control product	50 μL	50 μL
Negative quality control product	250 μL	250 μL

Note: Different batches of reagents cannot be mixed.

Description

This kit uses specific primers and probes designed for the conserved region of the avian infectious bronchitis virus gene, and employs one-step fluorescence RT-PCR technology for in vitro amplification and detection of avian infectious bronchitis virus RNA for clinical pathogen diagnosis of suspected infectious materials.

Application

This kit is suitable for detecting avian infectious bronchitis virus RNA in tracheal exudate, bronchial and lung tissue, kidney or fallopian tube specimens, and is suitable for auxiliary diagnosis of avian infectious bronchitis virus infection.

Applicable instruments

ABI7500, Agilent MX3000P/3005P, LightCycler, Bio-Rad, Eppendorf and other series of fluorescence quantitative PCR detectors.

Specimen collection

The collected or processed samples should be stored at $2^{\circ}\text{C}\sim 8^{\circ}\text{C}$ for no more than 24 hours; If long-term storage is required, it should be stored at -70°C or below, with no more than 3 freeze-thaw cycles.

Protocol

1. Sample processing (sample processing area)

1.1. Sample pre-processing

The tested sample and collected samples (such as lung, kidney, or bronchial tissue samples, cotton swabs) should be fresh or stored in a low-temperature freezer at -20°C or -70°C .

Processing of tissue samples: Add sterilized 0.85% physiological saline to 1g~3g of lung or kidney tissue samples and grind them into a 5~10 fold suspension. Repeat freezing and thawing 2-3 times, centrifuge at 4000g for 10 minutes, and take the supernatant for nucleic acid extraction.

Cotton swab treatment: Twist and wring the cotton swab thoroughly before removing it. Centrifuge 0.5mL of sample

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solution at 4000g for 10 minutes, and take the supernatant for nucleic acid extraction.

1.2. Nucleic acid extraction

We recommend using our company's nucleic acid extraction or purification reagents (magnetic bead method or centrifugal column method) for nucleic acid extraction. Please follow the reagent instructions for operation.

2. Reagent preparation (reagent preparation area)

Based on the total number of samples to be tested, the required number of PCR reaction tubes is N (N=number of samples+1 negative control tube+1 positive control tube); For every 10 samples, an additional 1 sample is prepared. The preparation of each test reaction system is shown in the table below:

reagent	AIBV reaction solution	Enzyme solution
Dosage (sample size N)	19μL	1μL

Transfer the mixed test reaction solution into a PCR reaction tube at a concentration of 20uL per tube.

3. Sample addition (sample processing area)

Take 5μL of the nucleic acid, positive control sample, and negative control sample extracted in step 1, and add them to the corresponding reaction tubes. Cover the tubes, mix well, and briefly centrifuge.

4. PCR amplification (nucleic acid amplification zone)

4.1. Place the reaction tube to be tested in the reaction tank of the fluorescence quantitative PCR instrument;

4.2. Set the channel and sample information, and set the reaction system to 25μL;

Fluorescence channel selection: Detection channel (Reporter Dye) FAM, Quencher Dye NONE, please do not select ROX reference fluorescence for ABI series instruments, select None.

4.3. Recommended loop parameter settings:

step	Cycles	Temperature	Time	Collect fluorescence signals
1	1 cycle	50°C	10min	No
2	1 cycle	95°C	2min	No
3	45 cycles	95°C	15sec	No
		60°C	30sec	Yes

5. Result analysis and judgment

5.1. Result Analysis Condition Setting

(Please refer to the user manuals of each instrument for setting up, taking the ABI7500 instrument as an example)

After the reaction is complete, the results will be automatically saved. Based on the analyzed image, adjust the Start value, End value, and Threshold value of the baseline (users can adjust them according to their actual situation, with Start value set between 3-15 and End value set between 5-20, so that the threshold line is in the exponential period of the amplification curve, and the amplification curve of negative quality control products is flat or below the threshold line). Click Analyze to automatically obtain the analysis results.

5.2. Result judgment

Positive: The Ct value of the detection channel is ≤ 40, and the curve shows a significant exponential growth curve;

Negative: The Ct value of the sample test result is greater than 40 or there is no Ct value.

Quality control standards

- Negative quality control product: no specific amplification curve or Ct value display;
- Positive quality control product: The amplification curve shows a significant exponential growth period, and the Ct value is ≤ 32;
- The above conditions should be met simultaneously, otherwise the experiment will be considered invalid.

Limitations of detection methods

- The results of sample testing are related to the quality of sample collection, processing, transportation, and preservation;
- Failure to control cross contamination during sample extraction can result in false positive results;
- Leakage of positive controls and amplification products can lead to false positive results;
- Genetic mutations and recombination of pathogens during epidemics can lead to false negative results;



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5. Different extraction methods have differences in extraction efficiency, which can lead to false negative results;
6. Improper transportation, storage, or preparation of reagents can lead to a decrease in reagent detection efficiency, resulting in false negatives or inaccurate quantitative testing results;
7. The test results are for reference only. If a diagnosis is required, please combine clinical symptoms and other testing methods.

Note

1. All operations must be strictly carried out in accordance with the instructions;
2. The various components in the reagent kit should be naturally melted, completely mixed, and briefly centrifuged before use;
3. The reaction solution should be stored away from light;
4. Try to avoid the presence of bubbles during the reaction, and cover the tube tightly;
5. Use disposable suction tips, disposable gloves, and specialized work clothes for each area;
6. Sample processing, reagent preparation, and sample addition should be carried out in different areas to avoid cross contamination;
7. After the experiment is completed, treat the workbench and pipette with 10% hypochlorous acid, 75% alcohol, or a UV lamp;
8. All items in the reagent box should be treated as contaminants and disposed of in accordance with the "Biosafety Guidelines for Microbial Biomedical Laboratories".