

Feline Panleukopenia Virus (FPV) Nucleic Acid Detection Kit (Fluorescent PCR Method)

Product Number: DTK142

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 | 50T |
|--------------------------------------|---------------------------|
| FPV reaction solution | 500 $\mu\text{L}\times 2$ |
| Enzyme solution | 50 μL |
| FPV positive quality control product | 250 μL |
| Negative quality control product | 250 μL |

Note: Different batches of reagents cannot be mixed.

Description

This kit uses TaqMan probe method for real-time fluorescence PCR technology, designs a pair of cat parvovirus genome specific primers, and combines them with a specific probe to amplify and detect the DNA of cat parvovirus genome in vitro using fluorescence PCR technology, which is used for pathogenic diagnosis of suspected infectious materials in clinical practice.

Application

Feline panleukopenia virus (FPV), also known as feline parvovirus or feline distemper fever, is a highly contagious disease caused by feline panleukopenia virus (FPV). This disease can infect animals such as felines, raccoons, and weasels under natural conditions, and infection is relatively common. FPV has strong transmissibility, and infected animals can excrete the virus through feces, vomit, mucus, saliva, and urine to contaminate utensils, cages, bedding, and the surrounding environment. Pregnant female cats can also vertically transmit the virus to their fetuses, and fleas and blood sucking insects can become vectors of transmission. FPV has strong pathogenicity, with fetal abnormalities and even miscarriage in pregnant cats, high mortality rate, and no prodromal symptoms.

This kit is suitable for detecting feline parvovirus in samples such as cloacal swabs, feces, whole blood, and intestinal samples of deceased cats, and is used as an auxiliary diagnosis for feline parvovirus infection.

Applicable instruments

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

Specimen collection

Infected cats and other animals: cotton swabs from the cloaca, feces, whole blood; Dead cat: intestinal contents.

Protocol

1. **Sample processing (sample processing area)**
 - 1.1. **Sample Preparation**

Organizational samples: Weigh approximately 1g of each tissue from 3 different positions, cut and mix it with surgical scissors, and then take 0.5g and grind it in a grinder. Add 1.5mL of physiological saline and continue grinding. After homogenization, transfer it to a 1.5mL sterile centrifuge tube and centrifuge at 8000rpm for 2 minutes. Take 100µL of supernatant and transfer it to a 1.5mL sterile centrifuge tube; Take 100µL of throat swab sample directly into a 1.5mL sterilized centrifuge tube.

1.2. Nucleic acid extraction

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

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 following table:

| reagent | FPV 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 | 95°C | 2min | No |
| 2 | 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

5.2.1. If this kit is used for qualitative testing:

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

Negative: The sample test result shows no Ct value and no specific amplification curve.

Suspicious: If the sample test result is 40<Ct value ≤ 45, it is recommended to repeat the test. If the detection channel is still 40<Ct value ≤ 45 and the curve has a clear growth curve, it is judged as positive. Otherwise, it is considered negative.

5.2.2. If this reagent kit is used for quantitative detection:

Draw a standard curve with the log value of positive control concentration as the horizontal axis and Ct value as the vertical axis. Calculate the log value of the DNA concentration of the sample from the standard curve based on the Ct value of the sample to be tested, and then calculate its concentration.



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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

1. The results of sample testing are related to the quality of sample collection, processing, transportation, and preservation;
2. Failure to control cross contamination during sample extraction can result in false positive results;
3. Leakage of positive controls and amplification products can lead to false positive results;
4. During the epidemic, genetic mutations and recombination of pathogens can lead to false negative results;
5. Different extraction methods have differences in extraction efficiency, which can lead to false negative results;
6. Improper transportation, storage, or inaccurate 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 kit should be treated as contaminants and handled in accordance with the "Biosafety Guidelines for Microbial Biomedical Laboratories".