

Plasmodium spp. (Three-day/Intermittent/Falciparum/Ovale) Nucleic Acid Detection Kit (Fluorescent PCR Method)

Product Number:DTK540

Shipping and Storage

1. Store in the dark at $-20\text{ }^{\circ}\text{C}\pm 5\text{ }^{\circ}\text{C}$, with a shelf life of 12 months.
2. Low temperature transportation cannot exceed 4 days; After opening, store in the dark at $-20\text{ }^{\circ}\text{C}\pm 5\text{ }^{\circ}\text{C}$ without affecting the expiration date. Avoid repeated freezing and thawing, freezing and thawing 6 times will not affect the detection effect.
3. Production date and expiration date: see outer packaging box.

Component

Component	25T	Main components
QPCR premix (containing enzymes)	400 μL	Tris, KCl, MgCl ₂ , dNTPs, Taq enzyme etc
Primer Probe MAL/VIV/FAL/OVA	100 μL	Primer probe
Positive control MAL/VIV/FAL/OVA	500 μL	Plasmids containing target detection gene fragments
negative control	500 μL	Normal saline

Description

This kit is designed based on the principle of fluorescence PCR technology, with specific primers and Taqman probes designed for Malariae/Vivax/Falciparum/Ovale Plasmodium. The nucleic acid of Malariae/Vivax/Falciparum/Ovale Plasmodium is detected by a fluorescence PCR detector, thus achieving the detection of nucleic acid of Malariae/Vivax/Falciparum/Ovale Plasmodium.

Application

This reagent kit is used for qualitative detection of nucleic acids of Plasmodium malariae (MAL), Plasmodium vivax (VIV), Plasmodium falciparum (FAL), and Plasmodium ovale (OVA), and is used for auxiliary diagnosis and epidemiological monitoring of Malariae/Vivax/Falciparum/Ovale Plasmodium infection.

Applicable instruments

Suitable for fully automatic fluorescent PCR detectors such as ABI7500, Bio RadCFX96, Roche480, etc.

Sample requirements

Sample types: blood, mosquito and other samples.

Storage conditions: The collected specimens should be sent for testing in a timely manner. Those tested within 24 hours should be stored at 4 $^{\circ}\text{C}$, and those tested beyond 24 hours should be stored at -70°C , avoiding repeated freezing and thawing.

Protocol

1. Reagent Preparation (Reagent Preparation Area)

Melt the components of the reagent kit at 4 $^{\circ}\text{C}$ in the dark, mix thoroughly, and centrifuge immediately. Calculate the number of reagents used N (N=number of samples+1 tube of positive control+1 tube of negative control), configure the reaction system mix according to the table below, add it to an appropriate volume of centrifuge tube, mix thoroughly, and centrifuge immediately. Divide it into 20 μL PCR reaction tubes/plates and transfer it to the sample processing area.

Component	Volume (μL)
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qPCR premix (containing enzymes)	16
Primer probes MAL/VIV/PAL/OVA	4
Total volume (reaction system mixture)	20

2. Sample processing (sample processing area)**2.1. Nucleic acid extraction**

Select the appropriate nucleic acid extraction kit to extract viral nucleic acid, and follow the instructions of the corresponding kit for specific operations.

2.2. Add sample

Add 5 μ L of processed nucleic acid, negative control, and positive control to the PCR reaction tube/plate that has been added to the reaction system mix, resulting in a final volume of 25 μ L. Cover the tube tightly or seal the membrane, centrifuge at low speed instantly, and amplify with a fluorescence PCR detector.

3. Amplification testing (nucleic acid amplification area)

Step	Temperature	Time	Cycles
Pre denaturation	95°C	5min	1cycle
Denaturation	95°C	10s	40cycles
Annealing/extension/fluorescence detection*	55°C	40s	

Note:1)*Fluorescence detection at 55 °C during step denaturation, using FAM as the detection channel.

2)*The ABI series fluorescence PCR instrument does not select ROX calibration, and the quenching group is selected as None.

4. Result analysis

According to the analysis of the image, adjust the start and end values (it is recommended to start from 3-15 and end from 5-20, and adjust the amplification curve of the negative control to be flat or below the threshold line). Click on the analysis button and view the results on the report interface.

Quality control

1. Negative control: Ct value>38 or not detected.
2. Positive control: The amplification curve is S-shaped and the Ct value is \leq 30.
3. The above requirements must be met simultaneously for the same experiment, otherwise this experiment will be considered invalid.
4. Each detection target requires a positive and negative control, and the baseline threshold is adjusted for different targets based on their corresponding negative results.

Result interpretation

1. FAM channel detects MAL, HEX/VIC channel detects VIV, CY5 channel detects FAL, ROX channel detects OVA.
2. Negative: Ct value>38 or not detected.
3. Positive: The amplification curve is S-shaped and the Ct value is \leq 35.
4. Suspected positive: The amplification curve shows a typical S-shaped pattern, and the Ct value is between 35 and 38, requiring retesting; If the retest results are consistent, the judgment result is positive. If the Ct value is greater than 38 or not detected, the judgment result is negative.

Limitations of protocol

1. Improper sample collection, transportation, and storage, as well as improper transportation, storage, and configuration of reagents, can all affect experimental results and even lead to false negative results.
2. If there is laboratory contamination, reagent contamination, or sample cross contamination, false positive results may occur.

Performance indicators of reagent kit



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1. Minimum detection limit: 500 copies/mL.
2. Linear detection range: 2×10^1 ~ 1×10^8 copies/mL.
3. Specificity: It can be detected in all specimens of Plasmodium falciparum, including Malariae/Vivax/Falciparum/Ovale Plasmodium, without crossing with other types.

Note

1. Each stage of PCR operation should be strictly partitioned to avoid cross contamination.
2. The components of the reagent kit should be thoroughly melted and mixed before use, and centrifuged for a few seconds before use.
3. Each component shall not be interchanged with other products or corresponding ingredients of different batch numbers.
4. If the test specimen is not tested in a timely manner, it should be stored at -20 °C or -70 °C.
5. The processing of samples should strictly follow biosafety regulations.
6. PCR operators should have experience and receive professional training.
7. This kit is only used for scientific research purposes and is not intended for clinical diagnosis.