MEBEP TECH(HK) Co., Limited
Email: sales@mebep.com Website: www.mebep.com
Tel: +86-755-86134126 WhatsApp/Facebook/Twitter: +86-189-22896756

Diagnostic Kit for Neisseria Meningitidis X/W/Y DNA

Product Number: DTL0727

Shipping and Storage

1. Store below 30℃. It is valid for 12 months.
2. Transport at normal temperature, not suggested over 14 days.
3. Opened but not completely used the all components should be stored at (-20±5)℃. It is recommended to separate in PCR tubes before refrigeration to avoid repeated freezing and thawing of all reagents next time. It is not recommended to repeat the freeze-thaw cycle more than 7 times.
4. Date of manufacture and term of validity: see the label.

Component

Component	48T
NM-X/NM-W/NM-Y PCR Master Mix	Lyophilized powder ×1 Bottle
Positive Control	100μL
Negative Control	1mL
Redissolved Diluent	1.5mL

1. Do not mix reagents from different batches.
2. The reaction system is lyophilized powder that contains all components required for fluorescence PCR, including Taq enzyme, primers, probes, dNTPs, and Mg^{2+}.

Description

This kit uses specific primers for Neisseria meningitidis X, W, and Y types, respectively combined with a specific fluorescent probe, and uses one-step fluorescent RT-PCR technology to perform in vitro amplification and detection of DNA of Neisseria meningitidis X, W, and Y types, and is used for clinical etiological diagnosis of suspected infectious materials.

Application

Neisseria meningitidis is a Gram-negative, encapsulated bacterium that can cause sepsis, meningitis, and death. Based on a chemically and antigenically distinct polysaccharide capsule, Neisseria meningitidis can be classified into at least 12 serogroups (including serogroups A, B, C, 29E, H, I, K, L, W-135, X, Y, and Z). Strains with five of these serogroups (A, B, C, Y, and W135) cause the majority of disease.

This kit is suitable for detecting DNA of Neisseria meningitidis type X, type W, and type Y in samples of cerebrospinal fluid, blood, and throat swabs, and is suitable for auxiliary diagnosis and epidemiological investigation of Neisseria meningitidis type X, type W, and type Y infection.

Applicable instruments

Real-time fluorescence PCR instrument with FAM,VIC,ROX,CY5 channels.

Specimen collection

1. Applicable sample type: Cerebrospinal fluid, blood, and throat swab samples.
2. Sample collection and processing: Cerebrospinal fluid samples: The procedure should be performed by experienced professionals under sterile conditions. Collect 1mL of cerebrospinal fluid and place it in a sterile, screw-capped tube. In a Class II biosafety cabinet, take 0.1mL and add it to a centrifuge tube containing 0.2mL of sterile double-distilled water. Mix by shaking, boil at 100℃ for 10 minutes in a metal bath or water bath, and centrifuge at 13,000 rpm/min for 5 minutes. The supernatant can be aspirated for DNA nucleic acid extraction; Blood sample: Collect 3mL~5mL of venous blood from the

patient and place it in an anticoagulant tube. Take 0.1mL in a Class II biosafety cabinet and add it to a centrifuge tube containing 0.2mL of sterile double-distilled water, shake and mix, boil it in a metal bath or water bath at 100°C for 10 minutes, centrifuge it at 13000 rpm/min for 5 minutes, and aspirate the supernatant for DNA nucleic acid extraction; Throat swab sample: The throat swab is passed around the oral uvula to wipe the back wall, and placed in a test tube with 3 to 5 drops of sterile saline added to the bottom. In a Class II biosafety cabinet, 0.1mL is added to a centrifuge tube containing 0.2mL of sterile double distilled water, shaken and mixed, boiled at 100℃ for 10 minutes in a metal bath or water bath, and centrifuged at 13,000 rpm/min for 5 minutes. The supernatant can be aspirated for DNA nucleic acid extraction.

3. Sample storage and transportation: The collection or processing sample should not exceed 24 hours under the conditions of 2℃ ~ 8℃. If long-term preservation is needed, it should be stored below -70℃, and the freezing fusion should not exceed 3 times.

Protocol

1. Reagent preparation:

Take out the NM-X/NM-W/NM-Y PCR Master Mix, open the bottle cap according to the arrow direction of the aluminum-plastic cover, add 960μL of Redissolved Diluent, strongly mixed on the vortex for more than 1 minute, then stand for 30 ~ 60 seconds until the liquid is clear and transparent. Subpackage it into PCR reaction tubes according to 20μL/ tube.

2. Nucleic acid extraction:

This kit is not included for Nucleic Acid(NA) extraction reagent.

Commercially available extraction kits that have been shown to generate highly purified DNA when following manufacturer's recommended procedures for sample extraction are applicable.

If the extracted DNA is not used immediately, it should be stored below -20℃. For long-term storage, it should be stored below -80℃ and avoid repeated freezing and thawing.

Note: The Negative Control and the Positive Control does not require nucleic acid extraction.

3. Add sample:

The correspond substances were added to that above PCR reaction tubes according to the following table:

Type	Add sample description
Testing Sample	Add 5μL of the extract prepared in step 2 to the reaction tube, and close the tube cover.
Negative Control/ Positive Control	Add 5μL of negative control and positive control to the reaction tube, and cover the tube tightly.

The total reaction volume is 25μL.

After adding the sample, the PCR reaction tubes should be mix evenly for 5 seconds with a vortex shaker,centrifuged for 5 seconds on a palm centrifuge and then delivery to the nucleic acid amplification region. If bubbles are found, the tube wall should be gently flicked to remove bubbles and centrifuged again.

4. PCR amplification:

Place the reaction tube in the automatic fluorescent PCR instrument, set the negative control, positive control, and test sample parameters to perform PCR experiment according to the operating instructions of the instrument, and record the corresponding sample name.

Select FAM channel to detect Neisseria meningitidis type X DNA,select VIC channel to detect Neisseria meningitidis type W DNA,select ROX channel to detect Neisseria meningitidis type Y DNA,select CY5 channel to detect Internal Control. Set the sample reaction system to 25μL.

(Note: For ABI series instruments, select ‘None’ under ‘Quencher’, and select ‘None’ as the dye to use as the passive reference.)

Recommended reaction program setting:

Step	Cycles	Temperature	Time	Collect fluorescence signal
1	1 cycle	95℃	2min	No
2	45 cycles	95℃	15sec	No
		60℃	30sec	Yes

5. Result analysis:

After the reaction is completed, the results are automatically saved.

The Start value, End value and Threshold value of the Baseline should be adjusted according to the analyzed image (the user can adjust it according to the actual situation, the Start value can be set at 3-15, the End value can be set at 5-20, the amplification curve of the negative control should be adjusted to be flat or below the threshold line).

Click Analyze for analysis, make the parameters meet the requirements in the following '6.Quality control', and then go to the Plate window to record the Ct value.

6. **Quality control**

Negative control: FAM,VIC,ROX,CY5 detection channel has no obvious amplification curve.

Positive control: FAM,VIC,ROX,CY5 detection channel has an obvious amplification curve, and the Ct value ≤32.00.

The above requirements must be met at the same time in the same experiment, otherwise this experiment is invalid and needs to be repeated.

Explanation of Test Result

1. The FAM channel is the detection result of Neisseria meningitidis X type, the VIC channel is the detection result of Neisseria meningitidis W type, the ROX channel is the detection result of Neisseria meningitidis Y type,and the CY5 channel is the detection result of Internal control.
2. Positive: The Ct value of the target channel is ≤40.00, and the curve has an obvious exponential growth curve, and the VIC channel has or does not have an amplification curve.
3. Negative: The Ct value of the target channel is >40.00 or there is no Ct value,and the Ct value of the Internal Control is≤40.00.
4. If the FAM,VIC and ROX channel amplification curve of the test sample has no logarithmic growth phase and the CY5 channel Ct value is >40.00, the test result of the sample is invalid and the cause should be found and eliminated. Collect samples again and repeat the experiment.

Limitation

1. Sample detection results are related to sample collection, processing, transportation and preservation quality.
2. If cross-contamination is not controlled during the sample extraction process, false positive results will occur.
3. Positive control and leakage of amplification products can lead to false positive results.
4. The genetic mutations and reorganizations during epidemics can lead to false negative results.
5. Different extraction methods have differences in extraction efficiency, which will lead to false negative results.
6. Reagent transportation, improper preservation, or inaccurate reagent preparation reagent detection performance decreases, and the results of false negative or quantitative detection occur.
7. The results of this test are for reference only. If the diagnosis must be confirmed, please combine clinical symptoms and other test methods.

Performance Parameters

1. Limit of Detection: The minimum detection limit of this reagent is 500 copies/mL.
2. Precision: Repeat detection of the enterprise precision reference product 10 times, and the coefficient of variation (CV, %) value of detected concentration logarithm is ≤5.00%.
3. Compliance rate of negative/positive reference products: The compliance rate of negative reference products in enterprise reference is 100%, and the compliance rate of positive reference products is 100%.

Note

1. Please read the instructions of this kit carefully before the experiment, and strictly follow the operation steps.
2. Before the test, please be familiar with and master the operation method and precautions of various instruments to be used, and carry out quality control for each experiment.
3. The reaction solution should be stored away from light.

4. Try to avoid bubbles in the reaction, and the tube cover needs to be tight.
5. Use disposable heads, disposable gloves and special work clothes in each district.
6. Sample processing, reagent preparation, and samples need to be performed in different areas to avoid cross -pollution.
7. After the experiment is completed, use 10% hypochlorite or 75% alcohol or ultraviolet light to treat the workbench and pipette.
8. All items in the kit should be treated as pollutants and processed in accordance with the "Biological Safety General of Microbiological Biomedical Laboratory".