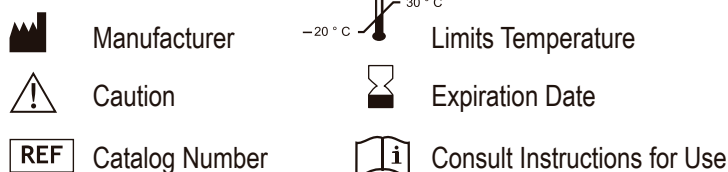


HumPCR™ MDR M. tuberculosis (multiplex) Detection Kit

SYMBOLOLOGY



1. DESCRIPTION

Tuberculosis is a serious global health problem. This situation has worsened due to the presence of multi-drug resistant Mycobacterium Tuberculosis (MDR) strains that cause the disease.

MDR tuberculosis is caused by TBC strains that are resistant to at least Rifampin and isoniazid which are two key drugs for the treatment of the disease. Strains have now been found that are even resistant to other drugs and antibiotics.

Early detection of all drug-resistant forms of this bacterium is a key factor in reducing and containing the spread of these resistant strains. The HumPCR™ MDR M. tuberculosis (multiplex) Detection Kit is the direct detection of MDR Mycobacterium tuberculosis (Rifampin and Isoniazid multiplex detection) on the basis of a genetic database, so it can diagnose very fast and accurately. It can amplify only specific genes using the PCR (Polymerase Chain Reaction) method, and take only 3 hours for detection. Therefore, it is a very fast accurate and reliable technique.

2. STORAGE

The HumPCR™ MDR M. tuberculosis (multiplex) Detection Kit is shipped at room temperature (15-25°C) because it contains a chemical stabilizer.

The HumPCR™ MDR M. tuberculosis (multiplex) Detection Kit should be stored immediately upon receipt at -20°C in a constant temperature freezer. For routine use should be stored at 4°C. When stored under these conditions and handled correctly, these products can be kept at least until the expiration date without showing any reduction in performance.

3. KIT CONTENTS

KIT	48	96	
HumPCR™ MDR M. tuberculosis (multiplex) Premixture	1	1	vial
PCR Internal Control (white cap)	1	1	vial
DNase/RNase free water	1	1	vial
MDR M. tuberculosis (multiplex) PCR Positive control	1	1	vial
PCR Negative control	1	1	vial
Mineral Oil Solution	1	1	vial
Brig™ Molecular Weight marker	1	1	vial
DNA purification kit	50	100	test

4. MATERIALS

Materials required but not provided:

- Microcentrifuge and PCR tubes

- Disposable gloves, powderless
- Pipettes
- Sterile pipette tip
- Vortex mixer
- Centrifuge for microcentrifuge tubes
- Thermal cycler
- Tube racks
- Electrophoresis kit
- UV transilluminator
- Biohazard waste container

5. PROCEDURE

Please read through the entire procedure before starting.

5.1 DNA PREPARATION

This kit includes all reagents necessary for purification of DNA from different samples. Carry out the DNA isolation according to the instructions available inside the kit, the instructions also can be downloaded from our website www.bioingentech.com. If you need an additional DNA Purification kit, use only the following kits that are standardized for the process: See Item 9. ADDITIONAL PRODUCTS.

Note:

Completely thaw the components of the kit prior to use; homogenize the solutions for several seconds prior to pipetting.

5.2 PREPARATION OF MDR M. tuberculosis (multiplex) PCR MIXTURE

1) Prepare the reaction mixture for sample, positive control, negative control, and internal control by combining the reagents as shown in the table 1. The final reaction volume should be 13.5µl

Notes:

- **Run a positive control, a negative control, and an internal control each 12 samples.**
- The mineral oil is necessary, even when using a thermal cycler that employs a top heating method.

Table 1. Reaction components for PCR

Kit components	Sample	Positive control	Negative control	Internal control
HumPCR™ MDR M. tuberculosis (multiplex) Premixture	5.5µl	5.5µl	5.5µl	
PCR Internal control (white cap)				5.5µl
DNase/RNase free water	6µl	6µl	6µl	6µl
DNA isolated from the sample	2µl			2µl
MDR M. tuberculosis (multiplex) PCR Positive control		2µl		
PCR Negative control			2µl	
Mineral Oil Solution	11µl	11µl	11µl	11µl

2) Place the tubes in a thermal cycler and perform amplification according to the program outlined in Table 2.

Table 2. PCR cycling parameters

PCR cycle		Temp.	Time
1 cycle	Initial Denaturation	94°C	2 min.
30 cycles	Denaturation	94°C	30 sec.
	Annealing	57°C	30 sec.
	Extension	72°C	30 sec.
1 cycle	Final extension	72°C	5 min.

5.3. DETECTION OF AMPLIFIED PRODUCTS

- 1) Prepare 1.5% agarose gel containing Ethidium bromide (Et-Br).
- 2) Load 7µl of PCR product, 7µl of positive control, 7µl of negative control, 7µl of internal control and 2µl of Brig™ Molecular Weight marker on agarose gel without adding a loading-dye buffer and perform electrophoresis.
- 3) Run electrophoresis by 100V (required about 30~40 minutes).
- 4) Identify the result on ultra-violet (UV) transilluminator.

5.4. INTERPRETATION OF THE TEST RESULTS

- Expected PCR product size: 308bp

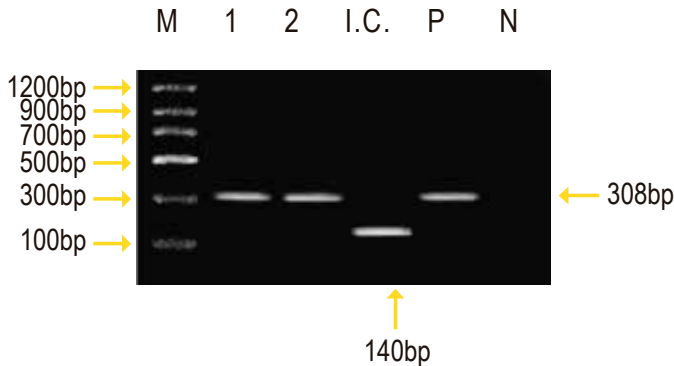


Fig.1 Result:

Lane M: Brig™ Molecular Weight Marker (Bioingentech Ltd.)
Lane 1~2: MDR M. tuberculosis (multiplex) Positive samples
Lane I.C.: Internal control
Lane P: Positive control
Lane N: Negative control

6. TROUBLESHOOTING

1) No band in positive sample

- Check Internal control band: If internal control band is seen, PCR has been performed properly. It is not a problem of the product.
- Check template DNA quality: the PCR reaction can be inhibited depending on DNA purity in some cases. In this case, extracted DNA should be diluted 10 times with DNA rehydration solution and used to perform PCR again.
- Check PCR machine: check the temperature and make sure to check that the machine is working properly.

2) No internal control band

- Check template DNA concentration: Competition can occur by high template concentration. Proceed with a lower concentration of DNA.
- Check template DNA quality: Even though DNA is isolated from the sample, the PCR reaction can be inhibited depending on DNA purity in some cases. In this case, extracted DNA should be diluted 10 times with distilled water and used to run the PCR reaction again. If still no band is seen, please inquire with our technical support staff.

3) Amplicon bands in the negative control

- Check contamination of distilled water: Distilled water can be contaminated. Perform PCR again with fresh sterile water.
- Check contamination of laboratory instruments and other environments: We recommend that you use filter tips and a pipette after sterilization to reduce contamination. Proceed with all procedures on a clean bench and keep the location where you procedures are performed sterile.

4) Poor resolution on agarose gel

- We recommend using a 1.5~2% agarose gel and run electrophoresis for 40 minutes at 100 V.

7. TECHNICAL ASSISTANCE

At Bioingentech we pride ourselves on the quality and availability of our technical support. Our Technical Service Departments are staffed by experienced scientists with extensive practical and theoretical expertise in molecular biology and the use of Bioingentech products. If you have any questions or experience any difficulties regarding Bioingentech Genomic DNA Detection Kits or Bioingentech products in general, please do not hesitate to contact us.

8. SAFETY INFORMATION

When working with chemicals, always wear a suitable lab coat, disposable gloves, and protective goggles. For more information, please consult the appropriate material safety data sheets (MSDS), available online in our website, where you can find, view, and print the MSDS for each Bioingentech kit and kit component.

9. ADDITIONAL PRODUCTS

Product	Product Code	Manufacturer
Bioingentech™ Genomic DNA Purification Kit (50 test)	PU-A001	Bioingentech
Bioingentech™ Genomic DNA Purification Kit (100 test)	PU-A002	Bioingentech

Product use limitations warranty disclaimer

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Products may be covered by pending or issued patents or may have certain limitations. Please visit our web site for more information.

All prices and specifications are subject to change without prior notice.

Product claims are subject to change. Please contact Bioingentech technical services or access the Bioingentech online catalog for the most up-to-date information on Bioingentech products.