

HDA-GT12 System for Detection of *Mycobacterium tuberculosis* DNA

Introduction:

Tuberculosis is a health threatening disease for immunodepression individuals. The increasing of antibiotic resistance in *Mycobacterium tuberculosis* has been a problem for diagnosis and treatment. The genetic differences between *M. tuberculosis* can be detected based on specific genomic sequences. Therefore, molecular diagnosis using PCR amplification method is a very effective way to detect the presence of pathogen for infection reactivation at the earliest stage.

BioCal provides a cost-effective multi-channel capillary electrophoresis system, HDA-GT12 for automatic *Mycobacterium tuberculosis* DNA detection. A consumable multi-channel capillary gel cartridge engaged to the system can automatically inject and analyze 12 strip samples simultaneously for less than 10 minutes or a 96-well plate for 1 hour. This affordable system can be easily operated in clinical laboratories for tuberculosis diagnosis and treatment.

Methods:

BIOTUB STD DETECTION kits from BIOTOOLS B&M labs, SA (Madrid, Spain) were used in this study. Positive control of *Mycobacterium tuberculosis* DNA was used for PCR* amplification and were analyzed in the HDA-GT12 system.

Operation Procedure:

1. Insert BioCal's gel cartridge into the system. (Cartridge capacity: 1200 samples) (45 seconds)
2. Place amplified DNA solution (20 µl) in 0.2 ml tube strips

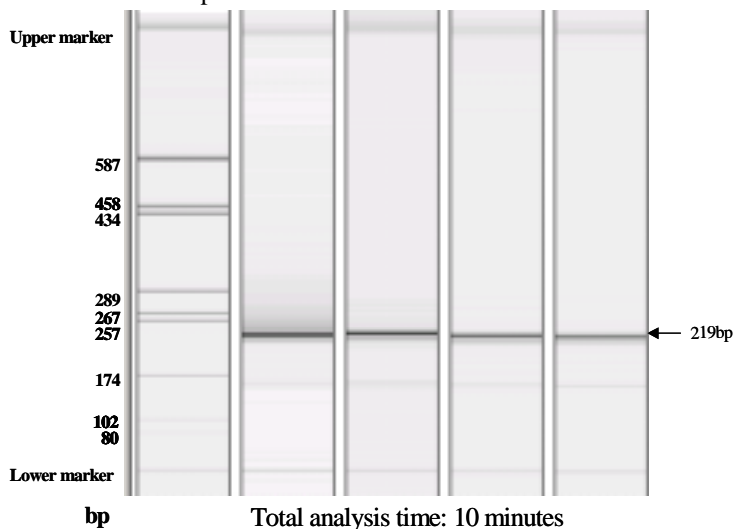
(or plates) into the sample tray (30 seconds)

3. Select a method from BioCalculator software and click "run" bottom to run samples (45 seconds).
4. Separation and detection the DNA fragments (500s seconds at 5kV).

*The PCR process is covered by patents owned by Hoffmann-LaRoche.

Results:

1. A 219bp bp band was detected for *M. tuberculosis* .
2. A DNA size marker was used to determine the size of PCR products



HDA-GT12 System Features:

- Automated process: no need for manual sample loading.
- Replaceable gel cartridge: no need for gel preparation.
- 10-minute electrophoresis time.
- Detection : 0.1 ng/ ul DNA concentration in the solution.
- Resolution: 1-5 bp in DNA fragment sizes between 50-500 bp.
- 96-sample capacity.
- Data view: in electropherogram or gel-view format.
- Software: digital data for analyses.
- Compact design: fits on any lab bench.
- Competitive system cost and economical consumables.
- HDA-GT12 system is for research use only.