

HDA-GT12 System for Detection of Antibiotic Resistance Genes in Methicillin-Resistant *Staphylococcus aureus* (MRSA)

Introduction:

Staphylococcus aureus is perhaps the most notorious of all the bacterial pathogens associated with human infection. Semi synthetic beta-lactam such as methicillin has been an effective treatment until the rising of the Methicillin-Resistant *Staphylococcus aureus* (MRSA) strains. Therefore, identify the MRSA strains is important for the choice of antibiotic usage clinically.

BioCal provides a cost-effective multi-channel capillary electrophoresis system for a high sensitivity and high resolution MRSA multiplex detection. This bench-type HDA GT-12 system uses a fluorescence mechanism for nucleic acid 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 research laboratories for different kinds of multiplex PCR analysis

Methods:

Ten-plex PCR* amplification DNA samples 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 1:4 dilution (20 µl) in 0.2



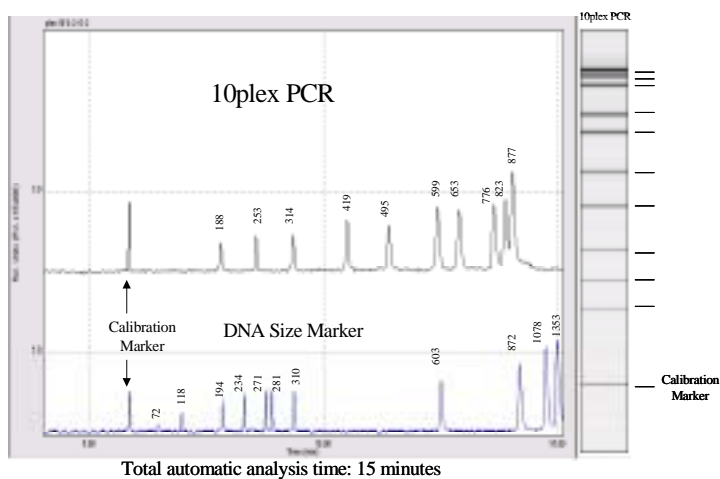
ml tube strips (or plates) into the sample tray (30 seconds)

3. Select a method from BioCalculator software and click "run" bottom to run samples (45 seconds).
4. Separation and detection the multiplex DNA fragments (900 seconds at 3kV).

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

Results:

1. Ten-plex DNA products were detected, ranging from 188bp, 253bp, 314bp, 419bp, 495bp, 599bp, 653bp, 776bp, 823bp, and 877bp.
2. A DNA size marker was used to determine the size of PCR products



HDA-GT12 Instrument 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/ µl 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 tative and quantitative analyses.
- Compact Design: Fits on any lab bench.
- Competitive system cost and economic consumables.
- HDA-GT12 system is for research use only.