SHIMADZU

Application Notes

DNA/ RNA Microchip Electrophoresis System (MultiNA)

Forensic Genotyping detection using crime scene investigation kit®

Introduction

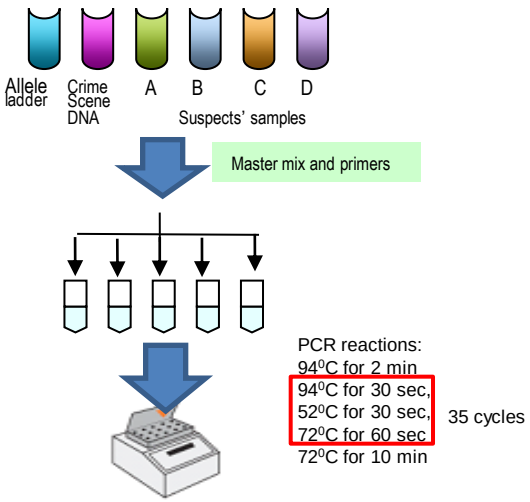
Forensic science utilizes individual DNA profiling to identify suspects in criminal investigations. DNA samples collected from crime scene and suspects are examined on different possible loci, where each loci has a number of possible alleles. In general, the larger the number of loci used, the more discriminant the ability to differentiate between individual to individual.

In this study, an allelic ladder with eight possible alleles in a single locus was used. One sample from crime scene and four from suspects were investigated and analyzed by using MCE-202 MultiNA DNA analyzer system. The analysis was carried out by comparing each suspect's genotype to the crime scene's genotype. The identification was based on the suspect's genotype that match to the crime scene's.

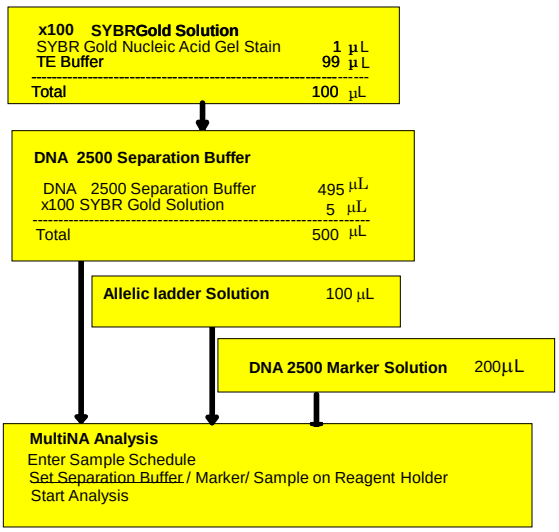
Materials

DNA-2500 Reagent Kit from Shimadzu Corporation, crime scene investigation kit® from BioRad, SYBR® Gold nucleic acid gel stain from Invitrogen Corporation, Allelic ladder from BioRad and TE buffer from Nacalai Tesque

Methods



Experimental Procedures



Results & Discussions

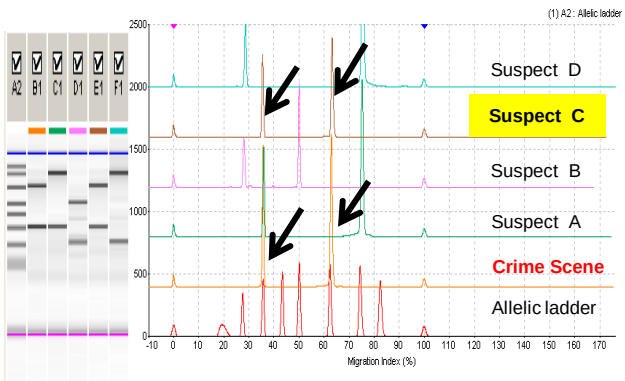


Fig. 1. Gel image and electropherograms of forensic samples amplified by multiplexing PCR

Figure 1 shows the analysis results of forensic samples (one crime scene and four suspects samples) using the MCE-202 MultiNA. The amplification products originating from the crime scene sample with genotype 7-3 matched to suspect C (7-3), but not to suspect A (10-3), suspect B (5-2), and suspect D (3-2).

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