CASE REPORT

Abstract: We applied Y-STRs (DYS385/DYS19/YCAII) to an adhesive plaster left at a crime scene. This plaster may have included body fluids from more than one person. Firstly, we performed preliminary examinations, ABO-blood type examinations, and commonly used DNA examinations (D1S80, HLADQα, TH01, and PM) on these specimens. As a result of these examinations, we could evidence that suspect A did not contact with the plaster, but could not confirm the presence of perspiration from suspect B. As the next step, we applied Y-STR examination to the plaster. Using this examination, we detected alleles that coincided to those of suspect B. We also concluded that the fluid from an unidentified person was vaginal fluid based on crime scene investigation. Y-STRs examination data obtained from 124 persons in Tokushima prefecture showed that 1.613% of individuals demonstrated haplotypes 10-18/15/19-23, which was detected from the plaster and from suspect B. Therefore, we considered that there was a high probability that the perspiration detected in the plaster was that of suspect B. Based on these studies, we concluded that Y-STR examination of trace evidence was very useful to screen suspects using materials that contained body fluid from more than one person.

Keywords: forensic casework, mixed body fluid, Y-STRs
1) Samples

2) Preliminary examination for body fluids and ABO-Blood type examination

3) DNA-extract method and conventional autosomal DNA typing

4) Y-STRs examination
2) ABO-Blood type examinations

3) Conventional autosomal DNA type examination
5) Individual identification

According to the results obtained from the studies of Kasim et al and others (2003), the presence of a specific Y-STR marker is associated with the likelihood of a certain individual's identity. This approach has been widely used in forensic science for the identification of individuals. The characteristic pattern of Y-STRs can be used to uniquely identify a person, making it a powerful tool in criminal investigations.

4) Y-STRs examination

The examination of Y-STRs is an essential step in the process of individual identification. Y-STRs are genetic markers found on the Y chromosome that are passed from father to son. By analyzing these markers, scientists can determine the likelihood of a match between a suspect and a sample, thereby aiding in the identification of individuals. The analysis of Y-STRs is particularly useful in cases involving males, as females have two X chromosomes and their Y STRs are not inherited from their fathers.

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