DNA MIXTURE DETECTION: A COMPARISON OF FFFL AND POWERPLEX™ 1.2 AMPLIFICATION SYSTEMS

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Mixtures of biological material are common in forensic casework. Therefore it is necessary to assess the potential for detection of such mixtures before introducing an amplification system to the routine analysis scheme. We have performed a study on mixture detection ability using two commercially available fluorescent systems*: GenePrint*® FFFL System ™ and *GenePrint*® PowerPlex™ 1.2 System (Promega), DNA samples were mixed in ratios ranging from 1:1 to 1:100 and amplified. The products of amplifications were electrophoresed and detected using 377 ABI™ sequencer and samples were genotyped using GeneScan® and Genotyper® software (ABI™). DNA mixtures at 1:6 ratios were easily detectable and analyzed using both systems, while at higher ratios (up to 1:10) the detection and analyzed using both systems, while at higher ratios (up to 1:10) the detection and analysis of the mixture was sometimes unreliable. FFFL multiplex turned out to be more efficient in amplification of small amount of DNA mixtures while PowerPlex™ 1.2 system was more convenient for mixture analysis due to more polymorphic loci included in this system. Additionally amelogenin locus included in PowerPlex™ 1.2 system turned out to be good indicator of mixture ration due to well-balanced peak heights.