EVALUATION OF POWERPLEX®18D SYSTEM USING ABI PRISM 310 GENETIC ANALYZER

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In order to reduce processing times and satisfy the standards recommended by international groups, many DNA labs make improvements and optimize their processes. Generally, these improvements include an increase in samples processing capacity (multi capillary platforms), but this can be expensive for small laboratories, so they need other strategies. With this view, Forensic Genetics Unit of Legal Medical Service of Valparaiso has evaluated the new Promega system PowerPlex®18D (18D), achieving significant improvements in processing DNA samples. This system has been designed as a complement to multi capillary platforms, so the aim of this study was to test its utility using ABI PRISM®310 Genetic Analyzer (ABI 310), and also establishing the best conditions of amplification for different types of samples: whole blood, bloodstains on FTA® card and FTA® card buccal swab. To do this, three samples were extracted from five volunteers in the formats described above. DNA from whole blood samples was extracted using the automated extraction system Maxwell® 16 (Promega), using the DNA IQ ® reference kit (Cat. # AS1040) following the manufacturer's instructions. Blood samples collected on FTA® Genecard card and buccal swab samples collected on FTA ® Indicated Mini Card were purified following the manufacturer's instructions. Amplification of STRs were performed following the manufacturer's recommendations, changing the number of cycles (26-27-28-29) to determine the number of cycles that work best with each type of sample. The detection of the amplified fragments was performed by combining the running conditions for the kit PowerPlex 16 (Promega) for ABI 310, plus recommended operating conditions for the system 18D for ABI PRISM ® genetic analyzers 3100/3100-Avant by the manufacturer, and the module used to run AmpFℓSTR® Identifiler (Applied Biosystems), which was optimum for data collection. This was done this way because the 18D system was not designed as a complement to the ABI 310, so there are not recommendations for this instrument. The results showed that for samples of FTA® blood stain, whole blood and FTA® buccal swab the optimal number of cycles was 26, 27 and 29 respectively. The running conditions described did not affect the results obtained for any of the types of samples analyzed, none of the tested cycles. We conclude that this system can also be used in ABI 310 and its use provides a better alternative strategic for small laboratories seeking more efficient procedures. ⌘