DIRECT AMPLIFICATION OF CONVICTED OFFENDER BLOOD SAMPLES ARCHIVED ON FTA CARDS USING IDENTIFILER DIRECT AND POWERPLEX 16 HS AND THE APPLIED BIOSYSTEMS 3730 DNA ANALYZER

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Potential changes in Canadian legislations are expected to result in an important increase in the number of convicted offender samples submitted to the National DNA Data Bank of Canada. In anticipation of this expansion, modifications to the current analytical process for DNA typing were considered. Protocols for direct amplification of STR loci from biological samples (blood and buccal) collected on FTA™ cards without prior DNA purification using AmpFℓSTR Identifiler® Direct and PowerPlex® 16 HS STR systems were optimized along with the use of a high throughput Applied Biosystems 3730 DNA Analyzer. In order to reduce the overall sample processing cost, reduced PCR volumes combined with various FTA™ disk sizes were tested. Optimized STR profiles were obtained using a 0.53 mm disk size in 10 µL PCR volume for both Identifiler® Direct and PowerPlex® 16 HS. These protocols have proved effective in generating high quality profiles on the 3730 DNA Analyzer with both blood and buccal mock FTA™ samples. Here we report the results from the processing of 111 convicted offender blood samples archived on FTA™ cards. Robustness, genotype concordance, sample stability and profile quality were assessed. The results from these studies corroborate our previous findings using mock blood and buccal FTA™ samples. The present protocols offer enhanced throughput capability and cost effectiveness without compromising the robustness and quality of the profiles obtained. These results support the use of these protocols for processing convicted offender samples submitted to the Canadian National DNA Data Bank.