

SUCCESSFUL DNA EXTRACTION FROM SERUM SAMPLES

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Serum is the portion of liquid blood that remains after coagulation of the cells. Because serum is thought to be devoid of cells, one might not expect to be able to isolate nuclear DNA from serum samples. Using standard organic extraction methodology, we have successfully isolated DNA from serum samples in a recent forensic case. The methods used for extraction from serum and the PCR data from this case will be presented, as well as data from a cell line authentication study that involved the PCR testing of 10 samples by fluorescent STR analysis.

As this forensic case involved the DNA comparison of a blood standard to two separate serum samples from which positive HIV tests were obtained, the successful extraction of DNA from these serum samples was essential; the obvious goal of the testing being to ensure that the individual linked to the serum samples was in fact the source of the samples. The DNA obtained from the two serum samples was successfully analyzed using the AmpliType® PM+DQA1 PCR Amplification and Typing Kit (PE). Serum sample 1 contained approximately 550 µl, and serum sample 2 contained approximately 1,200 µl. These serum samples were organically extracted with back-extraction and quantitated using the QuantiBlot® Human DNA Quantitation Kit (PE). A sufficient quantity of DNA was obtained in both serum samples for PCR amplification. One ng of DNA was targeted for amplification using the AmpliType® PM+DQA1 PCR Amplification and Typing Kit (PE). Complete six-locus profiles were obtained from both serum samples. Typing of these samples revealed that the tested individual could not be excluded as the source of the DNA obtained from both serum samples. Further testing on serum sample 1 is being performed using the Ampf/STR Profiler Plus™ PCR Amplification Kit; data will be presented.

After similar organic extraction methodology was used with 10 cell line samples submitted for a cell-line authentication study, complete 10-locus profiles were obtained for 6 out of 9 samples using the Ampf/STR Profiler Plus™ PCR Amplification Kit. Of the remaining samples, three had partial profiles, and only a single sample completely failed. Overall, usable comparative data were obtained from 9 of the 10 serum samples.

These examples of successful DNA extraction from serum samples demonstrate the value of pursuing serum samples as a potential source of DNA in a forensic or other (paternity, medical, etc.) case.