

GENERATING DNA PROFILES FROM IMMUNOCHROMATOGRAPHIC CARDS USING AN LCN METHODOLOGY

Tam Ho and Reena Roy
Penn State University, University Park, PA

The aim of this research was to obtain DNA profiles from immunochromatographic test devices which have already yielded positive or negative results with body fluids such as blood and saliva. The present research involved body fluid samples from several male and female donors. Each body fluid was detected using the appropriate immunochromatographic card. The used cards were kept at room temperature for various lengths of time. The membranes were removed at the end of the designated times and the entire strip was extracted using a low copy number (LCN) extraction procedure. This included cell lysis in a buffer containing 0.01% SDS, and Proteinase K. The extracted DNA was purified and concentrated using a Microcon® 100 device, and quantified using the Applied Biosystems (AB) Quantifiler™ kit on the AB 7500 Real Time PCR System. The extracted DNA was amplified using a reduced amplification volume and higher PCR cycle numbers for both the AB AmpFISTR® Identifiler™ and AmpFISTR® Yfiler™ kits. While the best results were obtained when membranes were extracted at the end of one week, it was possible to obtain complete autosomal and Y-STR DNA profiles from cards which were stored at room temperature for almost three months. Given these results, when evidence samples are limited in size, an analyst may not have to extract DNA without confirming the identity of the body fluid to determine if the samples are of human origin. This method can also be used in cases where body fluids from the victim or the suspect may no longer be available for DNA analysis and only an immunochromatographic card remains as part of the evidence. Therefore, the above procedure allows the analyst to identify the body fluid as well as its donor.