EAFS 2015

PRAGUE

Czech Republic

6 – 11 September 2015

7th European Academy of Forensic Science Conference

Abstract Book

www.eafs2015.eu

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FORENSIC DNA ANALYSIS AND RELATED ISSUES

A PROTOCOL FOR THE RECOVERY OF STR DNA FROM FINGERPRINTS DEVELOPED ON THE ADHESIVE SIDE OF DUCT TAPE (EAFS-0428)

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When adhesive tape becomes an item of physical evidence, the adhesive side can be examined for fingerprint impressions, hairs, fibers, paint, soil, and DNA. The following is a method for developing fingerprints from the sticky surface of duct tape followed by DNA recovery from that same fingerprint. Individual fingerprints from a donor were collected on the sticky side of pieces of duct tape (50.8 mm x 101.6 mm) and placed on top of another piece of tape (non-sticky side) that has been affixed to a piece of cardboard. At the time of testing, gradual force was used to expose the sticky side containing the print. The fingerprint was developed using Black Wetwop™, rinsed with a stream of sterile water, and imaged using digital photography. To recover the DNA, an aliquot of 500 uls of chloroform or 500 uls of un-du® was deposited directly onto the print and the surface of the print was rubbed gently using a COPAN® 4N6 FLOQSwabs™. Alternatively, after solubilizing the adhesive with a sterile toothpick, the chloroform was soaked up directly into a COPAN NUCLEIC-CARD™. DNA samples were tested by analyzing a 1.2 mm punch or by extracting ¼ of the NUCLEICCARD using the COPAN nucleic acid optimizers (NAO™), a semi-permeable basket which retains fluid until centrifuged, and with the PrepFiler Express Extraction Kit on AutoMate Express extractor by Life Technologies. Quantitation was carried out with Quantifiler® Kit (Life Technologies). The AmpFLSTR® Identifiler® Plus kit (Life Technologies) was used for PCR of 4N6FLOQSwabs and extracted NUCLEIC-CARDS, while AmpFLSTR® Identifiler® Direct PCR Amplification Kit (Life Technologies) was used for PCR of 1.2 mm punches. The 3130 Genetic Analyzer (Life Technologies) was used for analysis. Our data demonstrate that this method was effective in visualizing the fingerprint and recovering the donor's full DNA profile using chloroform or undu ® as the adhesive solubilizing agent. The COPAN® 4N6 FLOQSwabs™ mediated the solubilization of the adhesive and absorption of the organic solvent containing the DNA sample. This protocol was effective in recovering the donor's full STR profile from fingerprints collected on duct tape over a period of 18 months.