RECOVERY OF STR DNA PROFILES FROM FINGERPRINTS DEVELOPED ON ADHESIVE SIDE OF DUCT TAPE

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Duct tape is a type of physical evidence recovered from cases when individuals have been abducted or restrained during the commission of a crime. Sometimes pieces of duct tape are collected from recovered packages containing contraband. In these types of cases, recovery of DNA profiles is useful in identifying individuals who have had contact with the tape. Removing tape from a tape dispenser or roll requires some personal contact and manipulation during the process. Fingerprints on the sticky side of duct tape can be developed by using the suspension powder method. Once the fingerprints are visible, the area can be swabbed with a COPAN® 4N6 FLOQSwabs™. In this study, donor fingerprints from a single individual were placed on the adhesive side of duct tape (50.8 mm x 101.6 mm) samples. Duct tape samples were then placed on another piece of duct tape (50.8 mm x 101.6 mm) affixed to a section of cardboard and stored over a period of 18 months. At the time of testing, the top layer of duct tape was removed exposing the adhesive side of the tape. This area was processed with Black Wetwop™, rinsed with a stream of sterile water, and photographed. The Black Wetwop™ adheres to papillary ridge impressions in the adhesive and this area was swabbed for DNA. Approximately 500 uls of un-du® or an aliquot of 500 uls of chloroform was deposited directly onto the print and the surface of the print was rubbed gently using a COPAN® 4N6 FLOQSwabs™ or a sterile toothpick. After solubilizing the adhesive, the chloroform was absorbed 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 performed using a 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. This method was effective in visualizing the fingerprint impressions and recovering the donor's full DNA profile from fingerprints collected on duct tape over a period of 18 months. DNA profiles were obtained from the COPAN® 4N6 FLOQSwabs™ that mediated the solubilization of the adhesive and absorption of the organic solvent containing the DNA sample.