A NEW TOOL TO ASSIST CRIMINAL INVESTIGATIONS: DNA-STR PROFILES FROM "SKIN AND OIL" FINGERPRINTS

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A law enforcement agency requested assistance in obtaining a surreptitious DNA profile from a suspect who was unlikely to provide either a voluntary or a 'discarded' sample. Upon consultation with the investigator, we devised approach based on our OneTouch™ DNA recovery and purification kit; obtaining a 'clean' fingerprint suitable for processing by our OneTouch™ protocol. Three laminated pages (8 x 11 in.) were produced, cleaned and placed inside a 3-ring binder. The investigator subsequently interviewed the person of interest and presented the laminated pages as if asking for help in identifying the images on the laminated pages. The investigator returned the binder to our laboratory for screening and DNA processing.

Latent fingerprints were identified on the surface of the three laminated pages using DNA-free black fingerprint powder. A cluster of three fingerprints were identified on Item 1, one fingerprint was identified on Item 2, and one fingerprint was identified on Item 3. Each fingerprint/cluster was processed individually, and thus three independent DNA profiles were obtained using our OneTouch™ DNA recovery and purification protocol.

Briefly, each fingerprint was collected with a sterile cotton mini-swab moistened with 10 □L of detergent-based collection buffer using the single swab 'wet-dry' technique. The mini-swab was then saturated with 50 µL of lysis buffer and biological material collected using a spin-basket followed by cell lysis/DNA extraction at 56^{o}C for 1 hour. The lysate was loaded on a OneTouch™ Xs column and purified DNA recovered by centrifugation. The lysate was concentrated 3 fold by vacuum centrifugal concentration and the purified, concentrated lysate was amplified in a 12.5 µL PCR reaction. Post-PCR purification and concentration (Amplicon Rx™) was used to increase the sensitivity of CE analysis.

Fingerprints identified on Items 1 and 2 produced a mixed DNA-STR profile from two contributors (the person of interest + investigator). The fingerprint identified on Item 3 produced a complete, single source DNA profile. Based on the profiles obtained from Items 1, 2 and 3, and the elimination standard from investigator, the person of interest was ***excluded*** as a potential suspect in the ongoing criminal investigation.

The experimental details and final electropherograms are shown and described in the poster.