

EVALUATION OF TAPELIFTING AS A COLLECTION METHOD FOR TOUCH DNA

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The use of tapelifting for collection of touch DNA from fabrics is routine in many jurisdictions, however, there is a paucity of data relating to the effectiveness of different types of tapes for tapelifting, the amount of tapelifting required to generate a useful profile, and whether or not tapelifting is more effective than swabbing from various substrates. This research investigates these questions by comparing two tapes of different adhesive strength currently in use in forensic casework (Scotch® Magic™ tape and Scenesafe FAST™ minitapes), for sampling from touch deposits on four different fabrics – cotton flannelette, cotton drill woven fabric, polyester/cotton plain woven fabric and polyester strapping.

Touch DNA was deposited on four replicates of each fabric substrate. Separate areas of each substrate replicate were sampled, either by taping with one of the two tapes or by wet/dry swabbing with cotton swabs. Taping was performed by application of tape over the defined sampling area once or repeatedly for a series of numbers of applications. DNA was extracted (DNA IQ™, Promega, USA), quantified (Quantifiler®, Life Technologies, USA) and profiled (Powerplex® 21, Promega, USA) from all tape and swab samples as well as the corresponding sampled substrates.

Significantly more DNA was extracted, and a higher proportion of alleles detected, from Scenesafe FAST™ tape than from Scotch® Magic™ tape. Among different numbers of applications of tape, the amount of DNA and number of donor alleles detected generally increased between taping once and taping eight times, and decreased from 16 to 64 tapings. For three out of four substrates, taping with Scenesafe FAST™ collected more DNA than swabbing and generated a greater median number of donor alleles. There was no significant difference between swabbing and taping from flannelette. Based on these findings, recommendations are presented for sampling touch DNA from fabric.