

CLOTHING AND BEDDING FROM SEXUAL ASSAULTS CASES: IS DNA ANALYSIS STILL RELEVANT AFTER LAUNDERING?

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We looked at semen and saliva persistence by investigating the serological and genetic properties of washed and unwashed stains on fabrics. For semen, detection with the naked eye or under a forensic light source, acid phosphatase (AP) testing, PSA testing and microscopy analysis were done on stains washed up to six times. We then sampled the stains with two different methods (swabbing and cutting) to compare the DNA quantities and the resulting genetics profiles. For saliva, detection under a forensic light source and α -amylase testing were done on stains washed up to three times. Saliva stains were sampled by cutting for DNA analysis. Throughout all experiments, five donors, three different washing machines and two detergents were assessed.

Results show that some semen stains washed six times can still be detected using a combination of forensic light source and PSA testing, and that most will generate a complete genetic profile when sampled by cutting. Swabbing collected DNA in quantities sufficient for amplification only from unwashed semen stains. Saliva stains could hardly be detected through forensic light source and α -amylase testing after a single wash, but it was still possible to generate complete genetic profiles, even after three washes.

Our study shows that it is possible to obtain interpretable DNA results on washed semen and saliva stains. We also provide some insights to optimize stain detection and sampling strategies according to the circumstances of the case and whether the forensic biologist is looking for an unwashed stain (ex: sexual assault in a hotel room) or a stain that may have been washed multiple times (ex: underwear from a child who reported a sexual assault several days after the event).