

## **POST-COITAL VAGINAL SAMPLING WITH NYLON FLOCKED SWABS IMPROVES DNA TYPING**

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In the examination of sexual assault cases, DNA typing of vaginal samples mostly occurs after differential DNA extraction. Notwithstanding the differential extraction method, the DNA profiles from the seminal fraction often show the male alleles at low-level in combination with female alleles. This unfavorable ratio male to female DNA is due to a limited amount of sperm cells and an overwhelming quantity of female cells. In this study, we compared standard cotton and nylon flocked swabs for post-coital vaginal sampling. Twelve couples donated 88 vaginal swabs - 44 cotton, 44 nylon flocked – which were taken with a time since intercourse (TSI) up to 84 hours. These vaginal swabs were sorted into categories on the basis of the TSI and submitted to 1) microscopic examination for the presence of male cells, 2) presumptive tests for the detection of seminal fluid and 3) DNA typing. Cellular elution was found to be 6-fold more efficient from the nylon flocked swabs. This makes microscopic analysis less time consuming as the higher cell yield and better cell morphology simplify detection of male cells. Both swab types reveal similar results regarding presumptive tests and male DNA typing. Positive presumptive tests (RSID-semen and PSA) were obtained up to 60 hours TSI and male autosomal profiles up to 72 hours TSI. Interestingly, over 50% of the samples negative for both presumptive tests resulted in informative male STR profiles. After differential extraction, less DNA was left on the nylon flocked swabs and more male DNA was isolated. Our results imply that the use of nylon flocked swabs for vaginal sampling will improve microscopic analysis and DNA typing in the medical forensic investigation of sexual assault cases.