AN EVALUATION OF THE STABILITY OF SEMINAL FLUID RECOVERED FROM CONDOMS: SPERMATOZOA MORPHOLOGY, STR AND MTDNA ANALYSIS

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Used condoms are routinely found at crime scenes. The ability to recover spermatozoa from the seminal fluid in condoms holds significant implications to forensic investigations. First, the identification of the spermatozoa by microscopic examination serves to confirm the presence of semen. Second, the genotyping of the spermatozoa serves to identify the semen donor, which may then indicate the guilty and exonerate the innocent. However, the analysis of semen in condoms can be problematic as demonstrated in casework. Even spermatozoa recovered from recently used condoms can be in poor condition, suggesting that condoms possess physical and/or chemical properties that can compromise the semen samples. To better understand the underlying mechanisms of this phenomenon, we conducted a study on the stability of semen stored in condoms. The two primary independent variables tested were condom type and duration of storage.

Three different types of condoms were selected for this study: Trojan lubricated, Trojan non-lubricated and Trojan spermicidal. A fixed volume of semen (1mL) was deposited into the tip of each condom, and each condom was then stored at room temperature for a period of time ranging from one day to about seven months. Afterwards, the interior of each condom was sequentially sampled with ten separate swabs, which were all tested for acid phosphatase activity. Also, the first swab sample was used to prepare a microscopic smear for the evaluation of sperm cell morphology. A select number of swabs were additionally subject to nuclear and mitochondrial DNA analysis. The swabs were extracted with an organic procedure followed by an ultrafiltration purification and concentration step. STR genotypes were obtained using the AmpFISTR® Identifiler® PCR Amplification Kit and mtDNA haplotypes were obtained using the LINEAR ARRAY™ Mitochondrial DNA HVI/HVII Region-Sequence Typing kit.