## B66 Effect of Lubricants and Nonoxynol-9 Exposure on Biological Evidence From Condom

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Attendees will further their knowledge when dealing with biological evidence exposed to lubricants and spermicides due to use of condom in sexual assault cases. The presented information will provide a starting point for further research on utilization of the rate at which nonoxynol-9 degrades the sperm cell membrane to help in determination of time of incident.

This presentation will impact the forensic community and/or humanity by demonstrating research to those working in the field that will further their knowledge when dealing with biological evidence exposed to lubricants and spermicides due to use of condom in sexual assault cases. The presented information will provide a starting point for further research on utilization of the rate at which nonoxynol-9 degrades the sperm cell membrane to help in determination of time of incident.

Condom use during sexual assaults has increased and, as a result, so has the forensic significance of condom-associated biological samples. Preservation of this valuable evidence has prompted the investigation of condom lubricants and spermicides for potential degradation of biological samples. Integrity of samples can be inferred by the ability to amplify short tandem repeats (STRs) on the Y chromosome. Y chromosome STRs are male-specific and are polymorphic in the number of times a sequence motif is repeated. As a result, Y chromosome STRs provide a great power of discrimination among individuals. It is important to prove that lubricants and spermicides from condoms do not decrease the accuracy of DNA profiles, and therefore, do not undermine the validity of such evidence in court.

Semen samples were incubated at room temperature and at 37° C for up to three days in the presence of a water-based lubricant, an oilbased lubricant, and the spermicide nonoxynol-9. Untreated samples were also investigated for comparison. Samples were harvested for DNA, which served as a template for PCR and quantitative PCR (qPCR). PCR targets included DYS 385, DYS 389I, and DYS 393 loci. For studying rate of degradation of the sperm cell membrane, Semen samples were incubated in condoms in the presence and absence of nonoxynol-9. Nonoxynol-9 (N-9) is classified as a nonionic surfactant and interacts with lipoproteins of cell membranes. Through a time course, samples were fixed with 4% paraformaldehyde and stained with propidium iodine (PI). Cells were sorted on the Guava PCA cell sorter and the percentage of PI negative cells (viable cells) and the percentage of PI positive cells (non-viable cells) were calculated.

Successful amplification of all DNA samples was demonstrated through qPCR analysis as well as gel electrophoresis of PCR products. Results also indicated that, over time up to three days, the percentage of viable cells decreased in N-9 treated samples but stayed constant in untreated samples.

In conclusion, it has been proven that exposure of semen samples to oil-based lubricants, water-based lubricants, and nonoxynol-9 does not prevent successful Y-STR. In addition, by determining the percentage of viable cells in a sperm sample, the length of exposure to N-9 can be estimated

**DNA, Y-STR loci, Lubricants & Spermicides**

 ** Presenting Author*