SEARCHING FOR SPERMATOZOA

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Forensic crime laboratories analyze evidence from various types of sexual assault cases. The most likely source of male DNA in sexual assault cases comes from semen which contains male cells commonly known as spermatozoa. Although it mostly involves humans, forensic bestiality cases are also common, and differentiating human spermatozoa from animal spermatozoa becomes a necessity. In such cases it is necessary to confirm the presence of human spermatozoa for the investigators and attorneys to bring charges against an assailant. Examining such evidence to identify spermatozoa requires a great deal of time and effort using stains such as Kernechtrot-Picroindigocarmine (KPIC) staining for the visualization of sperm.

SPERM HY-LITER™ technology in conjunction with fluorescent microscopy and specific computer software to detect spermatozoa is a novel method in the forensic community. This immunofluorescence staining technique is specific for human sperm cells since it does not stain animal spermatozoa, human epithelial cells or other types of body cells that may be present in the sample. In some instances, where the victim does not report the crime for several days and spermatozoa may become rare and difficult to detect, this immunofluorescent technology can detect rare spermatozoa among many other non-human spermatozoa and human cells. This technique also allows the detection of rare spermatozoa present as one of the components in a complex mixture of other body fluids. However the microcopy and the software to search for the stained spermatozoa is expensive and budgetary constrained may not allow a laboratory to use such tools.

In this study, SPERM HY-LITER™ technology was used to stain cells from various body fluids from humans and animals and mixtures containing spermatozoa from post-coital swabs. Once stained, the slides were manually analyzed by an ordinary microscope capable of detecting fluorescently labeled cells. This instrument does not have the computer software necessary for the automatic detection of these fluorescently stained human sperm heads.

The goal of this research was to identify human spermatozoa where a mixture of human and animal spermatozoa may exist without expensive equipment and software. Another objective was to be able to detect rare spermatozoa even after obtaining vaginal swabs several days after coitus. In one of the aspects of the study, slides were prepared from vaginal swabs and stained with KPIC. Once the spermatozoa were visualized the cells were stained with fluorescent dye. In all of the instances, human spermatozoa were identified from various samples analyzed by this method.

The results obtained from this research would benefit the other forensic biology laboratories as they can use this technology accurately and efficiently for identification of spermatozoa without straining the budget. ⌘