B34 Detection and Identification of Personal Care Products in Sexual Assault Cases

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The goal of this presentation is to detect and identify key ingredients of ointments, creams, lotions and personal lubricants on evidence submitted in sexual assault cases where there is no DNA present.

This presentation will impact the forensic community and/or humanity by allowing the forensic scientist to determine if a personal care product was used in a sexual assault. This analysis may provide supportive case evidence and corroborate victim/suspect statements

Personal care products such as ointments, creams, lotions, and personal lubricants used by assailants in sexual assault cases may serve as important evidence when there is no DNA present. Detection and subsequent identification of key components of personal care products on clothing and in sexual assault kits may also provide supportive case evidence and corroborate victim/suspect statements.

A representative sample of eighteen personal care products, including hydrophobic petrolatum based ointments, water based lotions, sunscreens, face and hand creams, were examined in this study. These products were smeared onto clothing and cotton swabs to simulate case evidence. A flowchart used for the detection of smears and analysis of key components of each type of personal product will be presented.

This study describes the detection of smears on clothing and cotton swabs using a combination of visual observation, short and long wavelength ultraviolet light, the Forensic light source, and attenuated total reflectance Fourier transform infrared (ATR-FTIR) spectroscopy. In addition, polarized light microscopy (PLM) is used to detect anisotropic smear components.

This study also describes protocols for the extraction of smears from the substrates and the identification of key components using various analytical methods, including Fourier transform infrared spectroscopy (FTIR), gas chromatography / mass spectroscopy (GC/MS), pyrolysis gas chromatography / mass spectroscopy (pyrGC/MS), scanning electron microscopy /electron dispersive x-ray spectrometry (SEM/EDX), capillary electrophoresis, and/or high performance liquid chromatography (HPLC).

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