



B102 A Comparison of KPS Fluorescein to Other Presumptive Blood Identification Techniques and Its Effects on PCR Based DNA Analysis Methods

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Attendees will gain an awareness of another chemical enhancement tool for detecting blood stains and its effects on PCR Based DNA analysis methods.

This presentation will impact the forensic community and/or humanity by providing another tool to the forensic community when searching for blood stains.

This study was designed to examine the following factors involved with processing evidence for blood staining: 1) to determine if KPS Fluorescein is more sensitive for blood detection than other presumptive tests, 2) to determine if KPS Fluorescein will result in false positives by cross-reacting with various substrates or cleaning products, and 3) to determine if the use of KPS Fluorescein will adversely affect the quality of STR-based DNA profiles developed subsequently.

Dilutions of blood were applied to substrates such as dry wall samples, treated and untreated wood samples, and carpet samples. Some of these substrates were then cleaned with typical household cleaners such as Joy Dishwashing Detergent and Clorox Bleach to determine the ability of the process to detect blood as well as assess potential cross reactivity

with these cleaners. Some of these substrates also were treated with either latex or oil based paint in order to determine the ability of the process to detect blood covered by paint. Some substrates also were exposed to environmental conditions for a period of seven days in order to determine potential effects on KPS fluorescence.

All of the substrates also were tested using the presumptive tests that employ phenolphthalin or Hemastix strips in comparison with KPS Fluorescein. It was determined that KPS Fluorescein and phenolphthalin sensitivity are comparable, but KPS Fluorescein exhibited cross-reactivity with some cleaning products. Hemastix were observed to have the greatest sensitivity for blood detection, but exhibited a high frequency of cross-reactivity with a variety of substances. KPS Fluorescein consistently detected blood under latex paint on wood. These substrates were retested at later intervals (i.e., 3 months and 6 months) after KPS Fluorescein treatment, and continued fluorescence was observed at these later times.

Both cuttings and swabbings were collected from these samples and processed by DNA extraction and subsequent STR analysis. It was determined that samples that were cut, rather than swabbed for DNA extraction, yielded higher levels of DNA and complete STR profiles. It was determined that KPS Fluorescein does not alter the ability to obtain DNA profiling results.

Fluorescein, Blood, DNA