

# EVALUATION OF THE SPERM TRACKER™ FOR SEMEN STAINS ON LOCALIZATION ON FABRICS

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In forensic labs worldwide and more particularly in those of the French “Institut National de Police Scientifique”, one of the first step in the identification of semen traces is the orientation method which rapidly enables the localization of semen traces, subsequently sampled for DNA analysis[1]. This test can be either based on auto-fluorescence of the semen traces, upon light excitation (mini-CrimeScope) and/or based on the detection of the acid phosphatase activity present in semen. This enzyme has the ability to catalyze the hydrolysis of organic phosphates like alpha naphthyl phosphoric acid, generating a reaction product that will subsequently react with a chromogen diazonium salt and induce a color change [2, 3]. A positive reaction is recorded upon rapid development (less than 15 seconds) of a purple color, but the procedure is long (30-40 minutes), needs special handling care of carcinogenic reagents and doesn't allow a precise location for small spots of seminal liquid since the detection is performed on a transferred image of the fabric.

Inversely, when using CrimeScope, the procedure is immediate but really lacks of sensitivity and often generates false positive results, giving only presumptive semen detection which have to be validate using a complementary technique [2, 4] [5].

Alternative methods were also extensively studied such as emerging spectrometric techniques applied for the forensic analysis of body fluids. These techniques include the use of ultraviolet-visible, infrared (IR), Raman[6], X-ray fluorescence[7], nuclear magnetic resonance spectroscopy and mass spectrometry[8] for investigating blood, semen, saliva, urine, vaginal fluid or sweat. Although all these spectrometric techniques seem to have a high potential to differentiate body fluids prior to DNA extraction, IR and Raman spectroscopy have shown the most promising results for discriminating stains from body fluids [9].

The aim of the present study is to evaluate the use of a new commercial product (Sperm Tracker™) specially developed in collaboration with the French “Institut National de Police Scientifique” (INPS/LPS69) for the detection of semen traces, directly on fabrics. We are presenting here the results of a comparative study between mini-CrimeScope and the newly launch product Sperm Tracker™. Evidence were given of the specificity, sensitivity and ease of use of the new product. Genetic analysis were also performed right after localization and demonstrate the full compatibility of the method with the subsequent DNA analysis.

## References

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