B15 Inhibition of Seminal Acid Phosphatase Detection by Urine

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After attending this presentation, attendees will learn information that could potentially aid in the analysis of evidence containing semen.

This presentation will impact the forensic community and/or humanity by providing a better analysis of semen test results when urine is in the sample.

Sexual assault evidence is frequently submitted to forensic labora- tories for biological screening and subsequent DNA analysis. Periodically, semen-stained evidence with apparent urine stains will yield negative results for seminal acid phosphatase even though spermatozoa are observed from slides prepared from these cuttings. The presumptive test for seminal fluid utilized by the California Department of Justice Central Valley Laboratory calls for 1 drop of thymolphthalein monophosphate (SAP solution #1) in citric acid buffer and 2 to 3 drops of Na_2CO_3/NaOH solution (SAP solution #2). Seminal acid phosphatase cleaves the phos- phate group off the thymolphthalein, resulting in blue color when the basic solution is added. Positive results were obtained with 1:10 semen dilutions on cotton underwear using 2 drops of SAP solution #2, but negative results were obtained from 1:10 semen dilutions spotted on neat male urine stains on cotton underwear when 2 drops of SAP solution #2 was used. This demonstrates that the presence of urine can interfere with this presumptive test for seminal fluid by preventing the SAP solution #2 from creating a basic enough environment to detect the thymolphthalein resulting from the cleavage of the thymolphthalein monophosphate by acid phophatase. Testing was done to show that this inhibition could be overcome by using 3 to 4 drops of SAP solution #2.

Semen, Acid Phosphatase, Urine

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