

Rapid Detection Kits for Biological Fluid at Crime Spot: Recent Approach of Crime Investigation †

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Abstract: Crime is not only a malafide occurrence that violates the law of the state but also a negative externality with enormous social and economic costs. Rapid changes in how people interact with each other, especially on a global scale enhanced by the internet, create a social dynamic that criminals can easily take advantage of in extending their reach. The advancement in science and technology is also reflected in crime investigation. Biological fluids viz., blood, semen, saliva, menstrual blood are most commonly encountered in most crimes. These biological samples are rapidly detected at the crime spot, which leads to the speedup of crime investigation and delivers justice to the victim. The blood detection kit uses two murine monoclonal anti-human hemoglobin antibodies as active components. When hemoglobin is present, a red line will appear in the test region for a positive result. An internal control result is a red line in the control region for a valid test. This kit is a very high sensitivity that can detect 20 ng/mL hemoglobin or a 10^{-7} dilution of blood. This kit shows cross-reactivity only with upper primate blood and ferret blood (weak); no reaction with animal blood. For menstrual blood detection human d-dimer marker was used and human hemoglobin as a control marker for human blood. Human semen can be detected using a Prostate-specific antigen (PSA) kit at the crime spot. Prostate-specific antigen (PSA) is a type of protein produced by cells in the prostate. The prostate is a small reproductive gland that helps make semen, the fluid that transports sperm from the testicles through the penis during ejaculation. PSA kit has high sensitivity, detecting 1 ng/mL PSA or a 10^{-6} dilution of semen. This kit shows cross-reacts only with the seminal fluid of primates. Human saliva can be tested at the crime spot using rapid stain identification (RSID) kit for saliva. This presumptive test for saliva is great to use in the field as a confirmatory test for human saliva. The test is specific for the human salivary (amyA) antigen. There is no cross-reactivity with blood, semen, urine, vaginal secretions, or menstrual blood. Strip test results are complete in 10 minutes. Thus rapid detection kits are potential tools for smart forensic application at the crime spot and are highly appreciated by the personnel engaged in crime investigation and the judiciary system selectivity.

Keywords: drugs; West water treatment; membrane; removing;

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Conflicts of Interest

The authors declare no conflict of interest.